NATURE MAGAZINE

CAROLINA NUMBER

MAY 1931 35¢ VOL. 17, NO. 5

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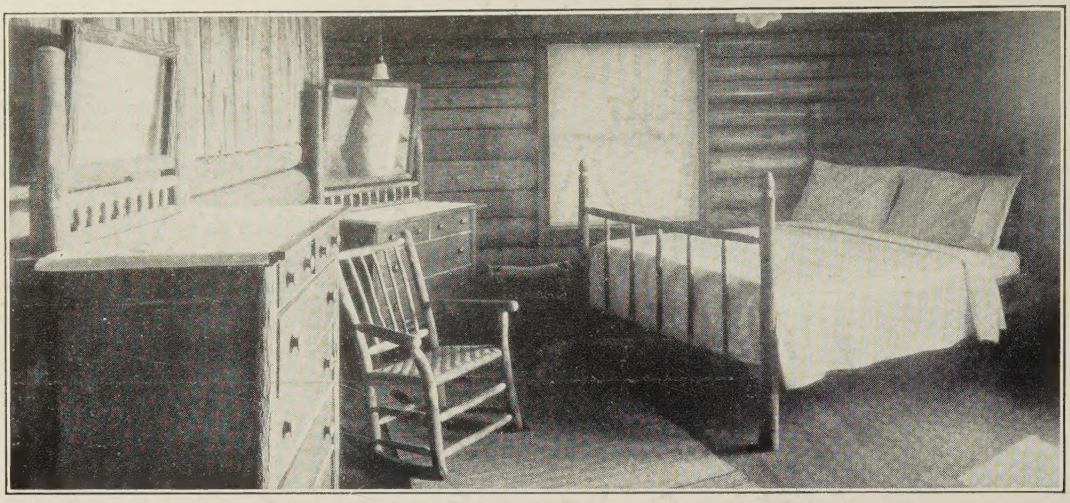

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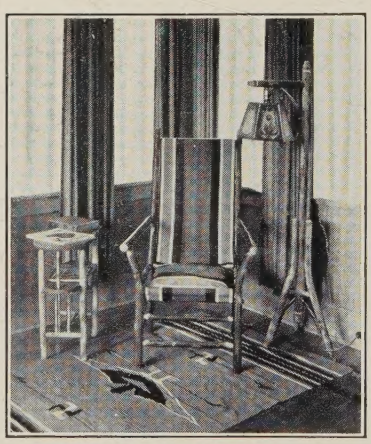

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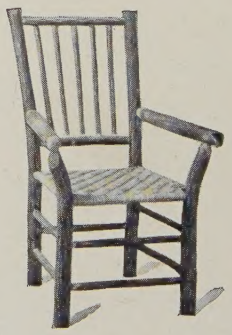

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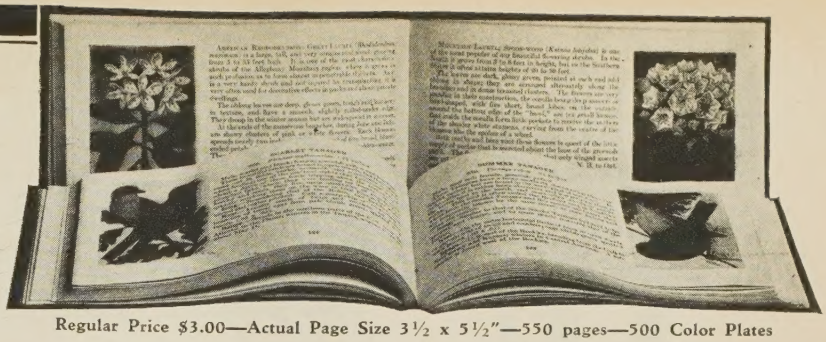

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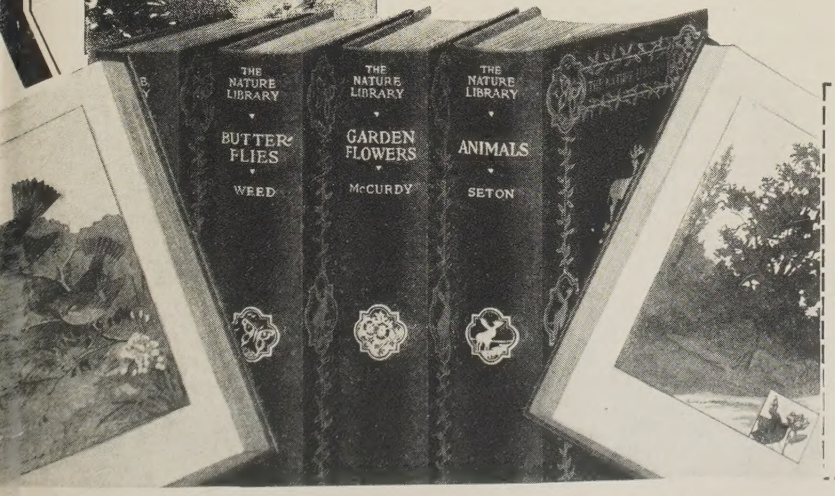

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CONTRIBUTORS TO THE CAROLINA ISSUE

Some of the finest writers and naturalists of the southland have participated in the preparation of this Carolina number. We are pleased to present them, quite informally, to our readers:

Herbert Ravenel Sass was born in Charleston in 1884, and found the city so lovely that he never left it. With boyhood came a deep interest in natural history, fostered by the richness of the South Carolina low lands, and likewise, a desire to write. Today Mr. Sass is among the best-known of Southern writers and American ornithologists, and both those who love Nature and those who appreciate good literature have established him as a favorite. Among his books are *Adventures in Green Places, On the Wings of a Bird, The Way of the Wild, War Drums* and *Gray Eagle.* His magazine articles are as numerous as the birds that flock in the country he knows so well. The Low Country and the Carolina Mountains are his principal subjects.

Dr. William Chambers Coker is Kenan Professor of Botany at the University of North Carolina, Director of the Coker Arboretum, named in his honor, writer, plant explorer, and one time financier. Hartsville, S. C., claims him. He rose to a vice presidency in a bank before he discovered that Nature was his real medium, and then courageously re-educated himself at Johns Hopkins University and under Bonn in Germany. He has found time to do valuable research work in entomology and write articles and books on a wide range of subjects. Nature Magazine will have an article on his Arboretum soon.

Edward Sussex Colleton is the *nom de plume* of a Carolina writer who is the literary, and, we believe, the actual heir of that John Colleton to whom, among others, Charles II gave the province known as Carolina, which was to stretch from "sea to shining sea." He knows the Carolinas from stem to stern.

Elizabeth O'Neill Verner has loved Charleston so well that she has devoted her artistic fingers and mind to the task of portraying the city's beauty to others. Graduated from the Pennsylvania Academy of Fine Arts, she has etched, painted, made block prints and organized art interests throughout the South. Her sketches have deservedly gained wide recognition and Charleston is as proud of her as she is of Charleston.

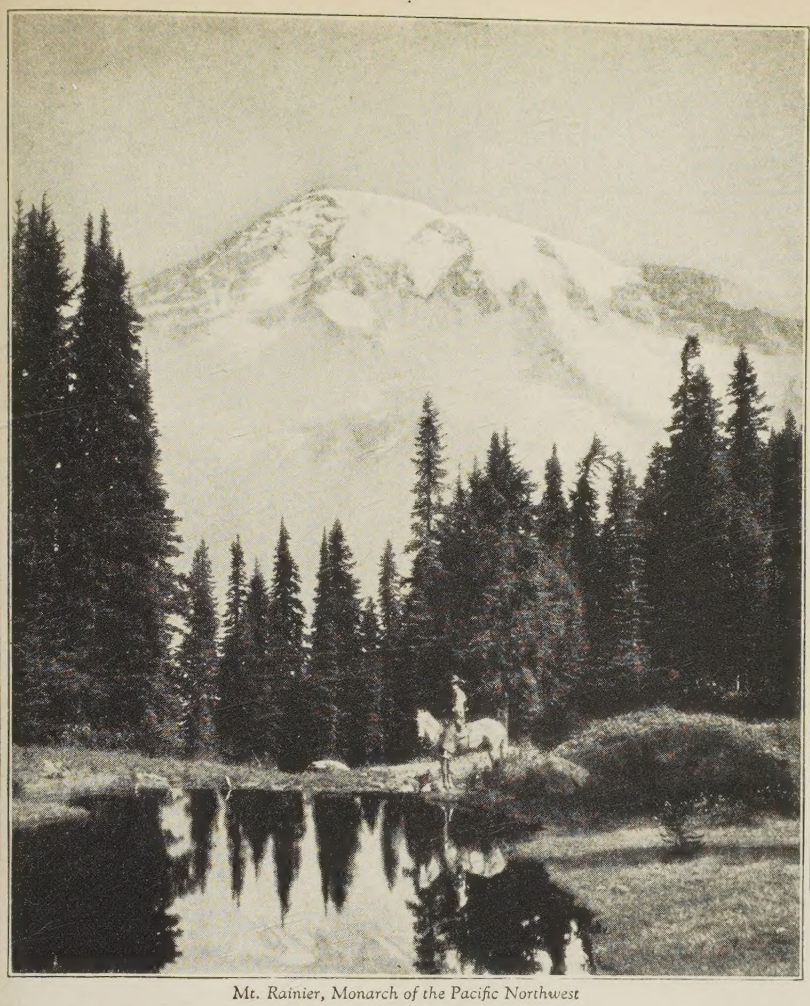
E. T. H. Shaffer has been contributing for years to leading magazines on Nature, economic, sociological and historical aspects of the South, particularly of the Carolinas. He also lectures, syndicates special articles and tends farm near Walterboro, South Carolina, his birthplace. Educated at the College of Charleston, he now serves as trustee for that institution. A southerner with a northern heritage, he writes with unique detachment and fairness on southern topics, and is an authority on many of the problems and history of Dixie.

E. Burnham Chamberlain was born in Charleston, S. C., thirty-six years ago. Five years later his family moved into a new house and in one of the upper rooms he and his brothers found a red-headed woodpecker trying frantically to escape. This, his first experience with wild life, seems to have determined him in his vocation, and he has since found more than enough to keep him deeply interested in this work. He studied in the North following service during the World War and later joined the staff of the oldest museum in America—the Charleston Museum. At present he is enjoying himself thoroughly as curator of mammals at that institution.

Alexander Sprunt, Jr., Curator of Ornithology at the Charleston, S. C., Museum, has been a "Nature bug" since he and his brother, both schoolboys, first started their museum in a spare room at home. Since he first discovered it, he has spent every available moment about the Charleston Museum, and left it only long enough to attend Davidson College and help out the Navy during the recent unpleasantness. He now devotes most of his time to writing, and Dodd, Mead Company recently brought out his first book, *Dwellers of the Silences.* Nature Magazine knows him of old.

Peter Gething is an Englishman who has fallen under the spell of the Carolinas, and has been moved to express her charms through the written word. During the war he served the British Lion both at the Dardanelles and in Flanders and France, and is one of the few who came through

(Continued on page 285)



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Travel DEPARTMENT

Edited By
ELEANOR WALKER

Summer in Switzerland

Fresh breezes blowing through your hair, snow-white mountains zigzagging far above you, blue waters rippling in the sun below—and at your feet flowers, white and blue and yellow and pink, for it's flower time in the Alps. Magazines and guide books and travel brochures speak mostly of "Winter Sports in Switzerland". There's joy and color in that, but if you wish to walk through fields and fields of fringed gentians, anemones, rhododendrons and primulas, May and June and some of July are the months for excellence to be in Switzerland. The whole summer is beautiful, but for the flowers those months are best.

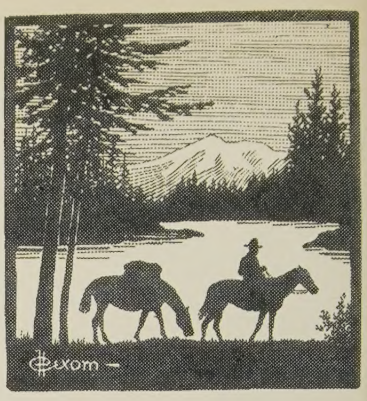
The wonder, too, of the April orchards cannot be told. Like acres of lacey mist the flowering trees cast their fragrance into

Historic Madonna Del Sasso Church at Locarno

an unforgettable spring. The neighborhood at Bex is a particularly beautiful orchard country. While you are there if you go into the woods close by, you will gasp at the multi-colored carpet—hepaticas and primroses, and over the rocky walls the purple Aubretia.

In whatever section of Switzerland you choose to travel it will be gorgeous. In the Jura Mountains of Berne and Neuchâtel, the profusion of flowers is particularly lovely. In many spots Alpine gardens are maintained where you may identify and study the flowers you have found. There is one at St. Cergue, reached by railway from Nyon, another at Pont de Naut above Bex, and another at Bourg St. Pierre in the Canton of Valais.

One of the most popular sights among flower lovers are the fields of narcissi which cover the mountain sides from Mon-



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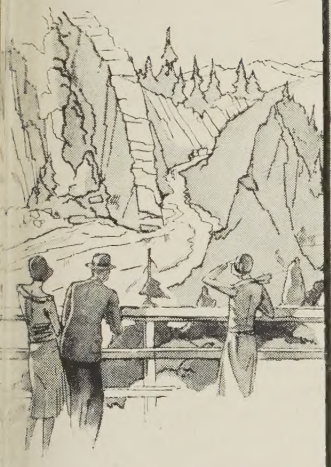

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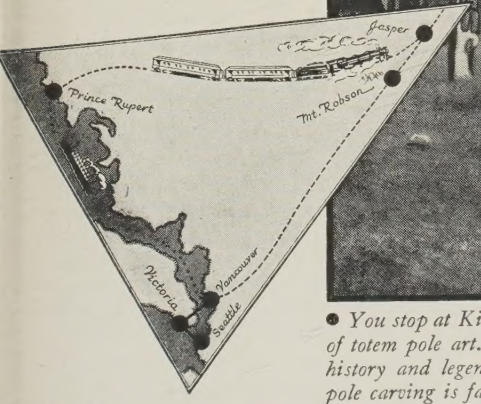

Here is the route of the 5 day Triangle Tour. Canadian National also operates daily north and south bound steamers connecting Vancouver, Victoria and Seattle.

You stop at Kitwanga long enough to see these fine examples of totem pole art. Fascinating and grotesque, they record the history and legends of the Indian aristocracy. Today totem pole carving is fast becoming a lost art, for the Indian has adopted the white man's tombstones—carving on them symbols similar to those on the colorful totems of Kitwanga.

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treux to Château d'Oex during May an June. The festival of the narcissi in Mor treux in June is one of the country's fa mous flower fêtes.

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If, however, you are ambitious to becom a mountain climber, the country offers yo easy rock peaks on which to practice until you gain the skill and strength to tackl the Matterhorn. For the angler, Switzerland is a paradise. For those who need com petitive sports there are golf, tennis and in certain sections of the mountains "winte sports" that many enjoy in July. If you wish to come back from your vacation with a sound body and a wholesome spirit, choose Switzerland.

Dwellers of the Silences

Rarely is there issued such a vivid, dramatic and accurate set of Nature stories as is included in *Dwellers of the Silences*, by Alexander Sprunt, Jr. Rarely, too, has the reading public been offered such a clear, sharp-etched picture of the real out-of-doors, where death is the penalty of carelessness and the prospect of serving as a meal the most likely one offered to the individual animal or bird by a stern Nature. Mr. Sprunt, curator of ornithology at the Charleston, S. C., Museum, does not make the mistake of so many Nature writers, and give his characters—Cygnus the Swan, Ursus the Bear, Wide-Wing the Eagle—human attributes; but he has so carefully studied them that he is able to create real personalities, whose joys, tragedies, triumphs and failures demand response from the reader. It is as if Mr. Sprunt had travelled from the land of blizzards to the tropics with his creatures, had seen them in every turn of their lives, and had reported their experiences with objectivity and lack of sentimentality. There is little plot in the stories, but much of action. There is little attempt at fine writing, but actually a fine, limpid, colorful style is achieved. Mr. Sprunt, we hope, will be sufficiently encouraged by the results of this, his first book, to prepare another in the near future. The illustrations of this remarkable volume are by Charles Livingston Bull, concerning which nothing further need be said. They are fit complements to the excellent stories. *Dwellers of the Silences* is published by Dodd, Mead and Company at $2.50.

Florida Garden Exhibit

The wide-awake Garden Club of St. Petersburg, Florida, held its annual Garden Exhibit during February before large crowds, in which were numbers of tourists who took back home with them an idea of the progressive activities of this organization. The aim of the group is home and city beautification, and the program of the exhibit tended to illustrate the effective use which could be made of native plants.

CONTRIBUTORS

(Continued from page 280)

our years of the conflict unscathed. He llowed Ravenel Sass, Alexander Sprunt nd others to reveal to him the beauties of Carolina Nature, and quickly succumbed. He has been writing articles and stories or both popular and scientific magazines luring the past few years.

Robert Lindsay Mason is the closest to a odfather the Great Smokies possess. He is evoting his life to apply, so he says, his mite-like energies to cultivate in a nore friendly manner the intricacies of iology, geology and ethnology of the mokies," which, he feels, are "the greatest rimitive field in America." He began his moky adventures with the U.S. "reve- oors", but cared less about stills than bout literary material. The author of *The ure of the Smokies,* and magazine-writer, is main trouble in life lies in the cruelty f editors who restrict him to less than ten olumes of forty chapters each when on he subject of his favorite mountains.

J. S. Holmes, State Forester in the North Carolina Department of Conservation and Development, a rank he has held with dis- inction for two decades, hails from On- ario, but was moved by his parents to western North Carolina in the early ighties. Before going to Yale Forestry chool, whence he was graduated in 1905, e spent fourteen years farming in the North Carolina mountains. At the invita- ion of Dr. Joseph Hyde Pratt, then State eologist, he became forester in the North Carolina Geological and Economic Survey nd later State Forester. He has seen his epartment grow from a one-man educa- ional affair to a fundamental part of overnment, and has largely contributed to ts present importance.

C. S. and H. H. Brimley, popularly known o naturalists everywhere as "the Brimley rothers", researchers *par excellence,* are nglishmen who migrated to North Caro- ina in 1880 and conducted for many years zoological supply business. Since 1895 H. H. Brimley has been curator of the North Carolina State Museum, in connec- ion with which he has carried out his nterests in large mammals, fish and hunt- ng. C. S. Brimley has spent the last dozen ears with the Division of Entomology of he North Carolina Department of Agri- ulture. Studies of insects, reptiles and birds orm his hobby.

R. Bruce Horsfall, who painted the fron- ispiece, is too well known to Nature Maga- ine readers to relate his history here. Suf- ce it to say that he was born in Clinton, owa, studied in Cincinnati, Munich and Paris, exhibited first at the age of 17, and as been illustrator, museum painter, and aturalist of recognized ability since the urn of the century.

Garnet Jex, designer of the cover map n this issue, and similar maps in other pecial numbers, is assistant artist of Na- ure Magazine, historian, landscape paint- r, sketcher, raconteur and lover of both ood and bad puns. He was born in Ohio ut came to Washington at tender age. Some of these days his series of maps will e issued as a book.

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WILD TURKEY OF
THE CAROLINAS

Painted specially for
the Carolina Issue
of
Nature Magazine
by
R. Bruce Horsfall

A. BRUCE HORSFALL

NATURE MAGAZINE

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CAROLINA

BY HERBERT RAVENEL SASS

SEARCHING one's mind for some one thing that might be considered characteristic of Carolina, one comes quickly to the conclusion that no such thing exists. There is nothing that will serve as a symbol of Carolina, using the term to include both the states blessed with that beautiful name. Between them, North and South Carolina comprise an area of nearly eighty thousand square miles, and within that great sweep of territory many different types of country and many different kinds of life are embraced. Hence, since there is no one type, no flower or bird or tree, that will express Carolina, I am going to tell about Dragonhead and then about Kittlefoot. They show the infinity of Carolina's charm.

Just at the beginning of dawn, one misty May morning, we poled a little bateau through dense water-growths along the edge of a lagoon. It was a warm, still morning in the very heart of spring. In tall pines, wreathed and bannered with Spanish moss, along the shore of the lagoon, yellow-throated warblers and parula warblers were singing, while from mixed woods and thickets beyond the pines innumerable bird-voices, almost bewildering in their variety, floated on the still air. Cardinals, mockingbirds, orchard orioles, Carolina wrens, summer tanagers, brown thrashers and towhee buntings

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WHERE KITTLEFOOT'S MOUNTAIN REARS AGAINST THE SKY

Mt. Mitchell, the highest peak east of the Rockies, seen in the Carolina sunshine with a fringe of rhododendron in obeisance at its foot

H. L. BLOMQUIST

DRAGONHEAD'S LAGOON, WITH ITS CYPRESS GUARDS

The trees, festooned with Spanish moss, and eerie in the half-light of dawn, make perfect setting for the last of the great reptiles, as he swims among the lily pads

were there, and, besides these, many lesser voices: pine and prairie warblers, blue-gray gnatcatchers, brown-headed nuthatches, tufted titmice, Carolina chickadees, red-eyed and white-eyed vireos, hooded warblers, Southern yellowthroats, bluebirds, jays and yellow warblers.

The trees and thickets swarmed with birds—birds of bright plumage and graceful form and sweet silvery notes and calls. But we were out, that May dawn, in search of bigger game, and we pushed on.

It was hard work forcing the little flat-bottomed punt through the thick mat of water-weeds fringing the lagoon, but presently we gained the open water. We were afloat now upon the placid surface of a forest-rimmed lake, dotted with floating islands of water-growths and thickets of willows; and cruising there amid the dawn-mists, dipping our paddles carefully so as to make no sound, we moved slowly along the margins of the floating islands and explored the channels between them, seeing many interesting sights but for a long while finding no sign of the thing that we had been looking for since daybreak.

L. W. BROWNELL

PERHAPS KITTLEFOOT HIMSELF

The black bear of the mountains typifies the ruggedness of high places

Often the willow clumps rising from the floating islands were fairly aquiver with life. Red-winged blackbirds took flight before us, Louisiana herons and little blue herons, most of them in the white immature plumage, craned their long necks from the green willow foliage, then rose with a swift beating of wings. Now and again a least bittern darted up from the floating weeds and flew rapidly away. A few belated coots and small squadrons of Florida gallinules, talking to one another ceaselessly in their queer infinitely varied language, swam off to right and left with an awkward bobbing of heads. Great blue herons passed over from time to time, their wide, curved pinions fanning the air with slow, measured beats. High overhead, we saw an osprey circling and, far above him, a splendid bald eagle, his dark wings motionless, his white head and tail shining like silver in the sun.

Gradually, as the morning mists cleared, the air became more populous. Another eagle, a dark bird not yet adorned with the snowy head and tail of the fully matured adult, joined the silver-crowned monarch circling above the lagoon. Turkey vultures appeared here and there against the face of the sky; wood ducks in twos and threes passed at frequent intervals, flying like the wind; crows and fish crows streamed by in a never-ending procession; three red-shouldered hawks, making the air ring with their wild, far-carrying cries, circled at varying levels.

Higher even than the eagles, a snakebird or water turkey swung round and round, long neck outstretched, long tail half spread like a fan, wings rigid and motionless; and presently to the right and left of it we saw other water turkeys, soaring in wide circles or ellipses, for all the world like black airplanes sharply

outlined against the blue. Watching the water turkeys, we saw by chance another sight that we would not willingly have missed. Into the field of our vision sailed suddenly a squadron of stately birds flying eastward at a great height.

They, too, resembled airplanes, for their long necks and legs were carried fully extended; but they were larger than the water turkeys; through our strong field glasses their wings appeared white with black edges and tips; and those wings, instead of being held always motionless, were flapped powerfully from time to time. They were a splendid sight as they sailed onward across the sky, and we hailed them joyfully not only because of the grandeur of the spectacle but because they were the first flock of wood ibises seen that spring, and year after year the first wood ibises, stateliest of all the birds of the upper air except the eagle himself, bring a thrill that no other bird can impart.

These were all fine things to see, exhilarating to the lover of birds, especially the lover of great and strange birds which, like the ibises, have in them something of the fascination of the tropics. Yet deeply as we delighted in them, they were not enough, for it was not to see these birds that we had gone voyaging that morning. There were other lagoons not many miles away where we might have seen an even more impressive luxuriance of feathered life—where herons of many kinds and tall white egrets, immaculate as lilies, had established their clamorous, swarming cities, in cypresses rising from the water. We had come to this lagoon with another object in view and, remembering this, we cruised on silently along the edges of the floating islands.

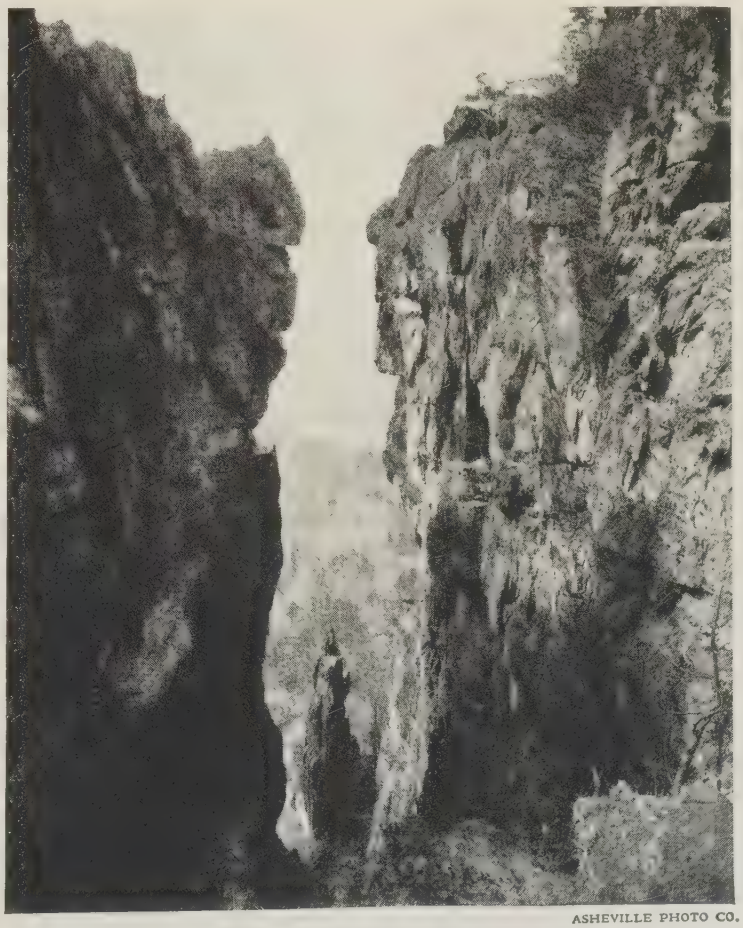
The mists had disappeared from the upper air, but close above the lagoon gray columns and curtains of vapor still drifted. We were skirting the edge of a large floating island, heading toward one of these low-hanging veils of mist; a little in front of us, under the mist, a promontory of the floating island thrust outward. Suddenly from behind this promontory a shape appeared—a long, black, jagged thing moving slowly and silently through the still, dark water.

For some moments it was almost obscured by the mist, but it came on steadily, heading obliquely toward us—a great alligator certainly not much less than twelve feet long. All the upper part of the saurian's craggy head and fully eight feet of his black, armored body were exposed to view; as he drew nearer, we noticed that he made not the slightest ripple upon the smooth surface of the water. There was something, some quality of dignity and of grim purpose, in his unhurried progress which gave him a certain outlandish majesty. Most of his plated bulk was invisible below the surface of the water; yet under the wisps and streamers of the mist that long, black, armored back and rugged juggernaut head seemed incredibly enormous.

Watching him as he came slowly on with the ghostly fog drifting over him, we were swept back in an instant to the Age of Monsters and we knew the strangeness of the fantastic youth of the world when on land and sea the giant reptiles were supreme. Yet it was not so much this sense of strangeness that filled the mind as it was a sense of this great creature's quiescent and unexerted power, his formidable and forbidding, yet admirable majesty.

We made no move. If the big reptile saw the motionless boat and the two upright objects in it—and he must have seen them—he paid no attention to them. He passed the boat at a distance of about fifteen yards and continued his slow progress down the lagoon where presently he was lost to view. We had seen many alligators, for here in lowland Carolina 'gators are not rare, though giants like this one are decidedly uncommon. But we had never seen a more memorable sight than the coming of that great black water-monster out of the morning mists; and when at last he had vanished into the mists once more, we bestowed upon him the name of Dragonhead and turned our punt's prow homeward.

Now that is all



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THE HANGING GARDENS OF GASTON

Nature created this cleft in one of her playful moments. A scene near Gastonia, North Carolina

there is to the story of Dragonhead, for this is no animal epic abounding in drama and thrills. Rather, it reveals what one may hope to see on a fine spring morning on a Carolina lagoon; and all these things, and many others, you may see there—herons, ibises, water turkeys, bald eagles, gallinules, least bitterns and alligators. All these are typical of Carolina. But equally typical is the summit of Mitchell's Peak in the Black Mountains, the highest peak in the eastern United States, 6711 feet above sea level. There, instead of water turkeys and wood ibises, you will see Carolina juncos and mountain solitary vireos. Instead of the moss-curtained cypresses and glossy-leaved magnolias around the shores of Dragonhead's lagoon, the trees that Kittlefoot knew best in his high, windy mountain home were the balsam fir and the black spruce of the cold uplands and the northern forests.

It was on Mitchell's Peak that Kittlefoot lived and perhaps still lives. I never saw Kittlefoot, but from what I heard about him and his methods it was not difficult to picture him in action. A black and white cow had wandered away from one of the valley pastures. Dusk found her grazing in a high, lonely cove below a balsam-clad ridge; the November winds were keen and before darkness fell she moved up into the woods to get into the shelter of the balsams.

Just within the wood's edge she startled a ruffed grouse; some distance away in the forest a few belated chickadees and a lone bluejay were calling. Dusk deepened to darkness; presently the moon rose above the encircling mountains, flooding the grassy cove below with ghostly light.

An hour, two hours passed. Suddenly there was a crashing sound among the balsams on the ridge, and the cow burst from the cover and came plunging down the slope. Behind her came another shape, a great, black, shaggy thing, racing down the hill faster than the cow, gaining on her every moment. Suddenly she stumbled and fell, and in an instant the bear was upon her. Probably it took old Kittlefoot not more than a minute or two to kill her.

This, according to the mountain hunter who told me something about Kittlefoot's ways, was a characteristic performance of that remarkable bear in his more ambitious moments. Unlike the general run of black bears, which are inoffensive creatures, he had a passion for meat, and he killed not only hogs, lambs and calves but occasionally even full-grown cows, terrifying them into flight and racing them over rough ground until they stumbled. I can not vouch for Kittlefoot's exploits, though I would almost take oath that the man who told me about him was a truthful man. But Kittlefoot's domain is there for all lovers of beauty and wildness to see and enjoy—a mountain empire of vast extent and indescribable loveliness.

It is a far cry from Dragonhead's lagoon to the windy heights of Kittlefoot's mighty mountain, but Carolina abounds in such contrasts, and that is one reason why it

CHARLESTON CHAMBER OF COMMERCE

THE STRAND AT THE ISLE OF PALMS
Sub-tropical trees, flowers and shrubs clothe South Carolina's coast with strange beauty

is a fascinating region for the naturalist and scientist.

It is nowhere tropical and yet there are parts of it which have a flavor of the tropics; it is nowhere northern and yet there are parts of it which recall the Laurentian wilderness. Its flora presents such contrasts as the palmetto and the black spruce, the live-oak and the balsam. Its birds include such widely separated forms as the white ibis of the Brazilian rivers and the red-breasted nuthatch whose true home is the far northern woods. Its mammals range in kind from the rice rat of the lowlands to the red squirrel or boomer of the high Appalachian peaks and ridges. These contrasts are a matter of elevation rather than latitude; to see the extremes of Carolinian wild life one must travel not north or south but east or west, from the ocean to the mountains or vice versa.

It is in the low, flat country near the coast, the home of the cypress and the live oak, that the sub-tropical forms occur and the bird-life of Carolina is to be seen in its full luxuriance. Here, on the sea-islands fringing the shore-line, in the wide salt marshes behind them, and in the great river swamps of the mainland, a varied and fascinating wild life exists. Traveling inland from this zone, one enters a broad belt of more elevated but generally level or slightly rolling country where swamps are few, except along the rivers, and where the forest growth is mainly pine. This belt extends inland to the fall line of the rivers where the Piedmont region begins; here the country becomes more hilly and a variety of broad-leafed trees, especially oaks and hickories, are almost as characteristic as the pines. From the Piedmont belt the traveler passes into the mountain region, reaching its culmination in the Black Mountains, where stands Mitchell's Peak, the highest of the Appalachian chain, and in the Great Smokies, the wildest and ruggedest country anywhere in the East, now in process of becoming a great national park.

From the point of view of the naturalist, the most interesting parts of Carolina are the two geographical extremes—the low country along the coast and the high mountain region. There are, it is true, many fascinating places between the mountains and the coast; but in general the rich and well cultivated farmlands of the middle region, white with cotton or green with corn, do not offer the lover of wild life as many attractions as the magnificent mountain forests or the teeming low country lagoons and swamps.

The great North Carolina coastal sounds, the haunt of pirates in the provincial days and now the winter feeding ground of fleets of whistling swans and thousands of geese and ducks, are famous. The South Carolina Low Country—it is so distinct a division of the State that it is generally spelled with capitals—is a paradise not only for the naturalist and the sportsman but also for the lover of romance. There, in the rice and sea-island cotton district of the coastal belt, of which Charleston was the center, the plantation civilization of the Old South reached a high stage of development; and there the story of that romantic time may (Continued on page 340)

ASHEVILLE CHAMBER OF COMMERCE

SPRING IN THE LAND OF THE SKY

The native growth of mountain laurel and rhododendron makes the drives veritable gardens

H. L. BLOMQUIST

GOLDEN CLUB
The shallows of ponds and streams near the coast nurture it

BLOODROOT
It leans toward the sun to fill its chalices with light

H. L. BLOMQUIST

WHAT NATURE GAVE TO CAROLINA

CONCERNING PLANTS OF COAST, SAND HILL, PIEDMONT AND PEAK

BY WILLIAM CHAMBERS COKER

BEFORE the coming of the white man, nearly the whole of the Carolinas, in common with most of the eastern section, was covered with a magnificent primeval forest. The only open areas were the scattered "savannahs" of the coastal plain, forming a narrow line along the seashore, and the bald summits of some of the mountains in the western part of the states, and on these grew a specialized and characteristic plant covering developed by the peculiar conditions. Everywhere else the smaller vegetation of grasses, flowers and shrubs had evolved under forest conditions and for hundreds of thousands of years had become more and more adapted to the shade and proximity of thick-growing trees.

H. L. BLOMQUIST

THE PASSION FLOWER OR MAYPOP
Here it grows along the railroad track in all its splendor, one of the most interesting of plants

When the trees were cleared away, these plants were suddenly placed under conditions they could not meet. The grasses, flowers, and shrubs of the open places were too highly specialized and adapted to their environment to take advantage of the new territory. Thus herbaceous plants from many lands—weeds, pasture and meadow grasses and exotic flowers—were able to win a place in the newly-cut lands, and vanquished the native plants so completely that it hardly pays to search for them in such spots.

The cultivated plants of farms and gardens were likewise all aliens. The plants of the Indians were few, and all of these came from farther south—the corn, the lima and kidney bean, certain gourds, and tobacco. Not a single species of pasture or hay grass can be listed as a native inhabitant. Even the fruits are mainly invaders. The Indian did not cultivate fruits, and later horticulturists have found only the scuppernong grape and its relatives, the Catawba, and recently improved forms of blueberries, to be useful. Even the weeds for the most part are foreigners.

It is to the woods, then, where conditions are natural, that one must go to drink in the beauty of Carolina plant life, for there, nearly everything is native. Under the stately covering of primeval forests the shrubs and flowers which have for long centuries owned and occupied the land still reign.

Most impressive of all is the evergreen mantle the Carolinas wear throughout the year—a mantle adorned with beautiful blooms, exquisite flowers and unique plant forms. From the sub-tropical dunes of South Carolina, festooned with their palmettoes, to the pine and balsam-covered peaks of the North Carolina mountains, the evergreens mark the distinctive note of the flora of this garden land, and form the cover for the smaller plants.

The coastal region presents an almost uninterrupted evergreen covering; between Beaufort and the Dismal Swamp grows a variety of broad-leaved evergreen trees and shrubs scarcely equalled anywhere in America in this latitude. The sabal palmetto covers the rolling dunes of the coastal islands of the southern state and is equalled in charm only by verdant forests farther inland. Farther north, the tall variety disappears, but the dwarf form persists and extends inland over the littoral half of the coastal plain. Suddenly, on Smith Island, North Carolina, off the mouth of Cape Fear River, the sub-tropical flora reappears and palmettoes as tall as in Florida stand sentinel along the beaches. No wonder the Indians used to say that Smith Island was a part of the Everglade State broken off and floated up to North Carolina.

H. L. BLOMQUIST

WHO WOULD EXPECT A CACTUS TO FLOWER HERE?

Yet prickly pear, Opuntia, may be frequently found growing with young pine on the sand hills

Smith Island marks the northern limit not only of the palmetto, but of the great *Magnolia grandiflora,* the most distinguished and magnificent broad-leaved evergreen in the temperate world. North of Charleston, it inhabits the coastal swamps in a local and scattered way, but on the highway between Charleston and Savannah, it comes into its full glory. Towering to 100 feet in height, it represents in spectacular manner that part of America which is remote and withdrawn from our turbulent centers, but which is as truly existent today in its poetry and romance as it was before the Civil War.

Along the dunes and in the depressions back of them are dense and solid brakes of yaupon, with a surface as firm and continuous because of the wind-shearing power as those of the matted beds of spruce on Mt. Katahdin over which Thoreau struggled. The yaupon

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WHEN THE RHODODENDRON CLOTHES THE HILLSIDES

These brilliant blooms are the bridal garments of the springtime when it is wooed and won by the rugged peaks

C. T. JULIEN

NOT BORN TO BLUSH UNSEEN

No more aristocratic southerner exists than the beautiful wild iris

H. L. BLOMQUIST

A MOUNTAIN BLOOM

Wild phlox is abundant among the hills

great botanical interest and striking horticultural possibilities are the American olive, the Gordonia, red bay, sweet bay, and the hollies. Few know the American olive. It is a beautiful plant with flowers whose penetrating fragrance is much like those of the better-known cultivated holly-leaved and sweet olives. The blooms are followed by a berry-like fruit much like the common olive, but smaller. One of these trees brought up from Smith Island has flourished in my garden in Chapel Hill for about fifteen years and is always an object of remark by visitors. It is strange how these elegant productions of our country have been practically ignored by their own people.

The most beautiful of all the evergreens is *Gordonia*, and this, and *Stewartia*, are the only representatives of the family that includes the true tea plant and the camellia. It is of this plant that William Bartram, in his *Travels of William Bartram*, which Carlyle said should be the American Bible, wrote: "The tall aspiring *Gordonia lasianthus*, which now stood in my view in all its splendor, is every way deserving of our admiration. Its thick foliage, of a dark green colour, is flowered over with large, milk-white fragrant blossoms, on long slender elastic peduncles, at the extremities of its numerous branches, from the bosom of the leaves, and renewed every morning; and that in such incredible profusion, that the tree appears silvered over with them, and the ground beneath covered with the fallen flowers."

Gordonia occurs in the swampy bays or "pocosins" through most of the coastal plain. At Hartsville, South Carolina, at the foot of the sand hills, it is not at all uncommon, and my brother has the only specimen I ever saw flower just as many another Carolina shrub, is easily adaptable for home planting and makes an excellent evergreen hedge or lawn specimen. This plant was used by the Indians from Mexico to Virginia for tea, and the prepared leaves were articles of barter throughout most of this area. Both Cabeza de Vaca, who wrote of the Carolinas in 1542, and John Lawson, the early historian, recounted the modes of its preparation and also the peculiar customs and taboos connected with it. Another tea plant occurring in the Carolinas is the dahoon, a holly that is rare in the northern state and slightly more prevalent southward.

H. L. BLOMQUIST

THE VENUS FLY TRAP

Carolina's unique carnivorous plant, growing only in the coast region

Among the many other Carolina evergreens of

in cultivation. Patience and long study at last succeeded.

The red bay, *Persea,* which, with the sassafras, represents the true laurel family in this country, and which indicates its kinship by the spicy odor of its leaves and the fragrance of its flowers, occurs in two varieties, the smooth and the pubescent.

The numerous hollies offer excellent possibilities for cultivation, but are little known to the public, although there are six evergreen species, four with red berries and two with black. Only the Christmas holly, the largest tree of the genus, has attained popularity. In the watery depressions in the flat woods of the coastal plain occurs the *Ilex myrtifolia,* a dwarfish tree with very small leaves, which is an object of striking beauty on its native flats. The two other evergreen hollies, or the so-called gall-berries of the swamps and bays, are the shrubs that make the great preponderance of evergreen growth so conspicuous in the coastal plain. I understand these to be the plant mentioned by one of the earliest explorers, Hariot, under the name of Sacquenummener. This writer speaks of them as having a berry almost like capers, eaten by the Indians after boiling for eight or nine hours, "otherwise if they be eaten they will make a man for the time frantic or extremely sick." The name gallberry comes, of course, from the extreme bitterness of the fruit. As a decorative plant these two hollies are now much used in such southern resorts as Pinehurst and Southern Pines.

The sweet bay is a conspicuous element in the southern swamps. Its white flowers, of the size of a gardenia, are of such penetrating fragrance as to make themselves known to all travelers even on the trains. The bay is a small magnolia that is evergreen throughout most of its natural habitat, but is deciduous in its northern range, which extends on the coast even to northern Massachusetts.

To mention all of the evergreen shrubs would be impossible here, but no article on the Carolinas should fail to include *Ceratiola,* which is just being brought into cultivation. It is a most interesting plant, reminding one of Scotch broom, but much denser. It is confined to the very sandy xerophytic situations in widely separated areas in the sand hills and along the coast. *Leucothoe, Andromeda,* partridge berry, and trailing arbutus are some of its companions along the coast, all of which are fairly well known.

The vines of the coastal plain are almost as lovely and important to the flower lover as the trees and shrubs. Everyone knows the yellow jessamine, so intimately associated with southern life and literature, climbing in almost continuous masses with its most profuse display of yellow flowers over bushes and fences and into the larger trees. There is no spectacle in these states that leaves so pleasing and permanent an impression. An odorless variation of this vine has recently been named *Gelsemium rankini* in honor of its discoverer, H. A. Rankin.

The smilaxes, called cat-briers or bamboos, are quite popular as Christmas decorations. The most common is the laurel-leaved smilax of inland swamps, but in the depressions back of the dunes is another species of smaller leaves and somewhat more delicate appearance. Both these and other species have large root stocks, of real food value, that were much used by the Indians, who mashed them to a pulp and produced what the early travelers called a good "spoon-meate."

Another modest vine too seldom appreciated is the cross vine, which climbs up trees to great height and generally opens up its large reddish, tube-like flowers with their yellow interior too high to be easily seen. When brought into the arbor it forms fine masses and the flower display is ample (Continued on page 345)

ASHEVILLE PHOTO CO.

WHERE LILIES AND YELLOW ORCHIDS GROW

In the forest glens rare flowers peep from the thickets, and exquisite fragrance fills the air

CHARLESTON CHAMBER OF COMMERCE

St. Philip's Church in Charleston, which itself is nearly 100 years old, stands on the site of the earliest church in the Carolinas. John Calhoun and Edward Rutledge, famous sons of South Carolina, lie in its graveyard

• • •

N. Y. ZOOLOGICAL PARK

One of the wide-eyed predators of the Carolinas—a strong-winged duck-hawk. He should have protection

• • •

JAMES E. THOMPSON

Where the raven nests on the face of the knife-like ridges

JAMES E. THOMPSON

• • •

Axe-hewn fort-like cabins dot the wilderness in the Great Smokies, and in them live descendants of those who used the long rifle so well

Two beautiful representatives of the Carolina flower legion—the pitcher plant of the South, and Sabbatia angularis

W. A. MURRILL

C. T. JULIEN

• • •

The rolling, timber-covered Blue Ridge Mountains of North Carolina, where some of the finest scenery in the East is to be found

HISTORICAL SKETCHES OF THE CAROLINAS ESPECIALLY PREPARED FOR THIS ISSUE BY GARNET JEX

THE DISCOVERY OF PLANTATION LAND

A CAROLINA FANTASY

BY EDWARD SUSSEX COLLETON

1 BEFORE THE WHITE MAN CAME
2 VISITING SPANIARDS 1520
3 1562 HUGUENOTS AT PORT ROYAL, S.C.
4 SIR WALTER RALEIGH, PROMOTER OF COLONIAL VENTURES
5 VIRGINIA DARE, THE FIRST AMERICAN-BORN ENGLISH CHILD, 1587
6 PIRATES LOOSE UNTIL 18TH CENTURY

UPON each region Nature seems to have bestowed some special gift to determine its ultimate destiny. Here she planted iron and coal deep in the hills and in time the sky is darkened with the breath of vast industrial towns. There she hid gold or diamonds and treasure seekers burrowed great pits and tunnels into the landscape.

To the happy land called Carolina Nature's gift was beauty—beauty of shore and river and mountain. With this she bestowed the treasure of a balmy year-round climate, that man might seek surcease from the toil and fret of harsher regions. There Nature wrought in contrast—from languid tidal river and semi-tropical sea-island to tumbling cataract and the cold silence of the Great Smoky Mountains. There she placed such variety and abundance of plant and wild life that every moment in the balmy open is packed with absorbing interest for those who come with open eye and understanding heart. Yet seemingly contrarywise to Nature's beneficent purpose the earlier human history of this land, political, economic and social, tended to restrict the enjoyment of the paradise to the few.

The plantation system, established throughout the Low Country, as the tidal region is termed, divided the coastal plain into far-flung estates, embellished by a landed aristocracy with grove, avenue and garden. Swamp and forest land became their private parks and preserves where wild life was protected and flourished as it could hardly have done in a region of small farms. At the opposite extreme, the Land of the Sky culminates in the ridges of the Great Smoky Mountains. The few Indian hunters were driven from this region, and because of isolation and lack of trails even the hardy mountaineers shunned these remote places, leaving an untouched kingdom of primeval forest and wild life.

Now, suddenly, all this rich domain from sea to hills becomes the new recreation land for multitudes. Its unspoiled natural wealth proves the long restriction of so much of Carolina for the classes to have been, in the end, a boon for the masses. While elsewhere in America material progress and intensive development have cut deep into Nature's gifts there has been preserved here in wistful sea-island, the red hills of the Piedmont and wild mountain fastness what, taken by and large, is doubtless the richest and most extensive survival of plants and wild creatures in eastern North America.

The Low Country, a region of forest and marsh, interlaced with dark languorous streams, was enjoyed for a glowing century or so by the planters and their fortunate guests—then it slept. When the old masters of the land departed, their splendid and ancient social and economic system in ruins, their domain receded into history. Planterland became almost a dim Arthurian legend. The wilderness of the high places became lonelier than when Daniel Boone delighted in its happy hunting grounds and carved with his knife "D. Boon Cilled A BAR on Tree in The YEAR 1760." It continued to be the one region east of the Mississippi unvisited, unexplored. Now, with automobiles and the spreading of a net-work of paved roads, Carolina, once an outdoor paradise for the privileged classes of the Old South, wakens into a pleasure-land for Everyman. It lies midway between winter that is New England and eternal summer that is Florida, a land where autumn's finger-tips touch those of spring.

II

The first Europeans to visit what is now

7 ROYAL GRANTS TO PROPRIETORS
8 CHARLESTON - FOUNDED IN 1680
9 RICE
10 THE FAMOUS SEA-ISLAND COTTON
11 RESIN, PITCH, TAR, TURPENTINE, TIMBER FROM THE FOREST
12 THE FREQUENT SHIP FROM ENGLAND
JEX

13 PATRIOTS MAKE IT HOT FOR ROYAL GOVERNORS
14 1775-81, WAR OF THE REVOLUTION
15 EXPLORATION OF THE WESTERN WILDERNESS
16 THE REMOVAL OF THE INDIANS
17 1793 ELI WHITNEY WHOSE COTTON GIN CREATED:
18 THE ERA OF THE GREAT PLANTATION

Carolina have recorded their delight in the smiling landscape, the abundance of wild life and the multitude and infinite variety of fruits and flowers. One of the earliest accounts is that of the Hilton expedition that sailed from the Barbados in 1663 to mark out likely places for settlement. It explored the coast line and rivers from what is now Beaufort, South Carolina, to Cape Fear in North Carolina. Describing the lands "about Port-Royal, the River Jordan or Combeheh and the River of Edistow" one reads in quaint diction of the day:

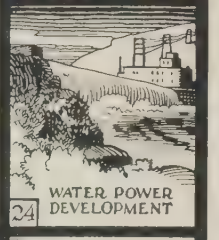
"The lands are laden with large tall oaks, Walnutt, and Bayes, except facing the Sea it is most Pines, tall and very good; the land, save where the Pines grow, is a good Soyle, covered with a black Mold, in some places a foot, in some places half a foot, and we think may produce anything as well as most parts of the Indies that we have seen. The Indians plant the worst lands because they cannot cut down the great timber in the best, and yet have plenty of Corn, Pumpions, Water Mellons, Musk-mellons; although the land be overgrown with weeds through their laziness, they have three crops of corn a year. The countrey abounds with large Grapes, Figs and Peaches; the woods with Deer, Conies, Turkeys, Quail, Curlues, Plovers, Teile, Herons; and the Indians say in winter with Swans, Geese, Cranes, Duck and Mallard, and inumerable of other waterfowls, whose names we know not; Oysters in abundance, with great store of Muscles. A sort of fair Crabs, and a round Shel-fish called Horse-feet; the Rivers stored plentifully with fish that we saw play and leap. There are great Marshes with a root that the Indians make bread of.

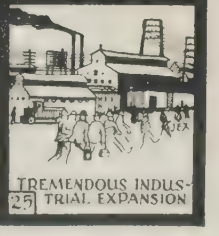
"The Ayr is clear and sweet, the countrey very pleasant and delightful; and we could wish that all they that want a happy settlement, of our English Nation, were well transported thither."

Writing about a century and a half later, Ramsey, the historian of South Carolina, mentions among the varieties of wild life then existing the bear, panther, wild cat, wolf, beaver, gray fox, red deer, otter, black and gray squirrel, rabbit, opossum, raccoon, mink. Checking this list today only wolf and beaver may not be found in forest or river-swamp. Of the ninety-three birds listed by Ramsey as then native to Carolina only two are extinct, the "Carolina Perroquet" and the wild pigeon.

III

Natural environment inevitably influences human development. Because of gentle, alluring climate the people of Carolina have always been devoted to outdoor sports and recreations and keen observers of Nature, because of the luxuriance of flowers and the poetic loveliness of stream and forest they have ever been people attuned to music, poetry and art. Along the Carolina coast, wistful tidal streams framed in cypress, live-oak and Spanish moss retain such liquid names as Wadmalaw, Santee, Ashepoo, Chee-ha, Combahee. In the Carolina mountains the Indians gave the clear, happy brooks such love names as Talulla, leaping waters; Toccoah, sparkling waters; Nantahula, noonday river; Cheesquaneeta, little bird. Azure peaks and ranges, where these streams are born amid cool, fern-hidden rocks, rejoiced in the music of such names as *Sunnalee*—morning—and *Senoyah*—darkness—and, for The Smoky Mountains, *Chesseetoah,* meaning place of rabbits. Surely from the beginning this land has been (Continued on page 350)





Our artist did not go beyond the present in his sketches, but we venture to predict a rich future for these Carolinas—a future wherein their wealth of beauty, their abundant wild life and their natural resources will be appreciated even more deeply than at present both by Carolinians and by the American people, who are rapidly discovering them.

L. W. BROWNELL

The black-crowned night heron looks at life with quizzical air

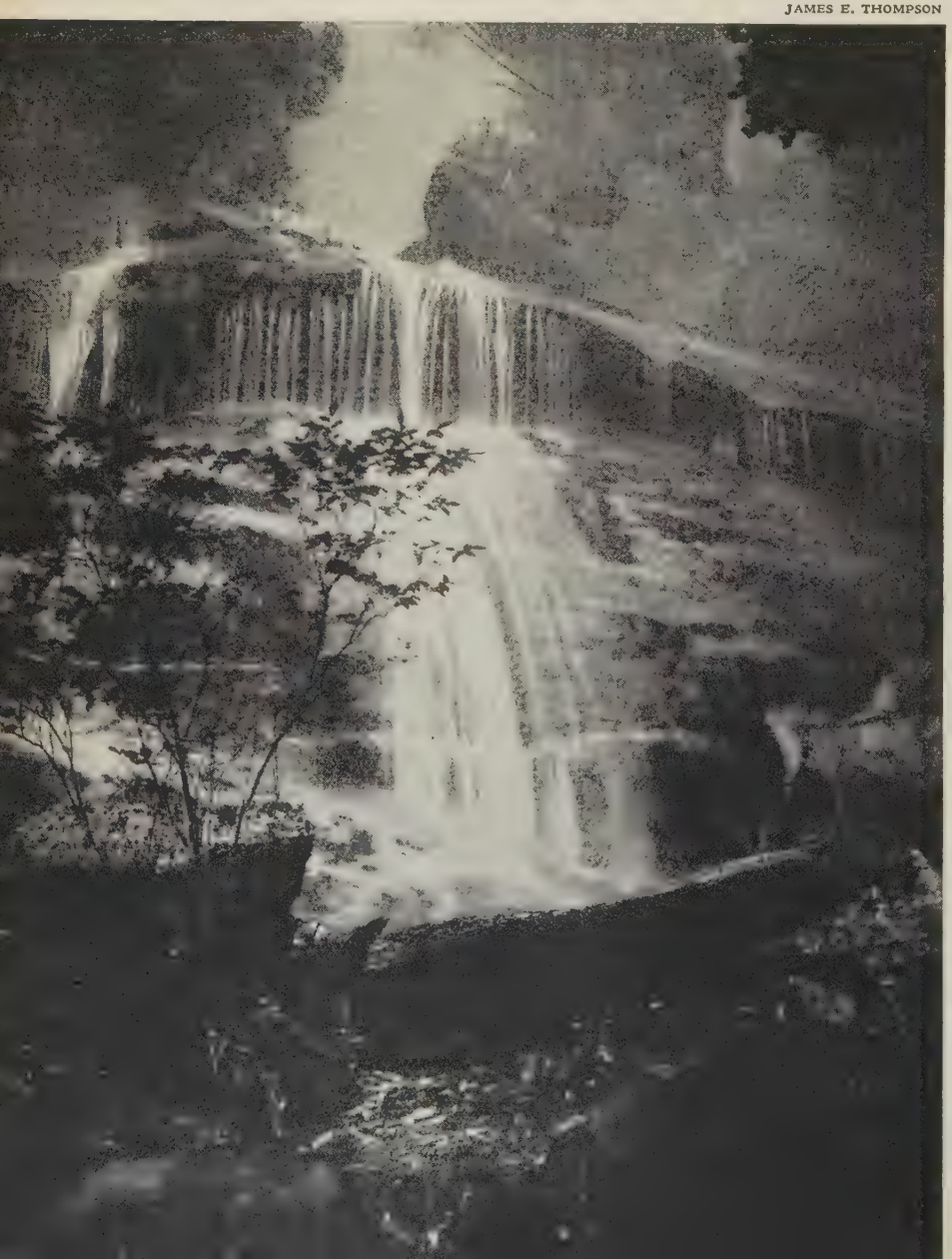
• • •

E. T. H. SHAFI

Goldilocks in a Hartsville, Sou Carolina, garden, with its bord of phlox, iris and larkspur

• • •

JAMES E. THOMPSON



Local color in "ole Caroline" deviltry is about to break loose any moment in this cornfield

W. A. MURR

• • •

Where a trout stream softly tri les over moss-covered ledges the Smokies

N. C. DEPT. OF CONSERVATION

A safe landing field—this well-stocked, fenced game preserve in North Carolina never lacks visitors

• • •

Lake Sauteetlah, near Robinsville, North Carolina, one of the loveliest bodies of water in the South

ASHEVILLE PHOTO CO.

• • •

JAMES E. THOMPSON

anding Deer, a Cherokee chief, dressed for the nous Green Corn dance, a tribal ceremonial

ROBERT L. MASON

• • •

aying the wealth in the Smokies De Soto never found—beauty, health and outdoor fun

"BLACKLOCK GATES,
CHARLESTON"

Reproduced
by courtesy of
the etcher,
Elizabeth O'Neill Verner

CAROLINA GARDEN-LAND

WHERE WEALTH AND TIME BROUGHT PERFECTION

BY E. T. H. SHAFFER

THE first Europeans to reach the shores of the Carolinas were astonished by the natural beauty of the scene, for here Nature had wrought so bountifully that the verdant forest appeared to sea-weary souls as the fabled garden of Hesperides. The Frenchman, Laudonnière, who landed with Jean Ribault in 1562, gave a first account of the Low Country of South Carolina:

"We found the place as pleasant as possible, for it was all covered with mighty high oaks and infinite store of cedars, and with Lentiskes growing underneath them, smelling so sweetly, that the very fragrant odor made the land seem exceedingly pleasant. On every side were to be seen palm trees and other sorts of trees bearing blossoms and fruits of very rare shape and very good smell."

A hundred years later, when the English founded Charles Town, the same luxuriance of tree and flower, with carpet of wild azalea and silvan arbor of yellow jessamine and trumpet vine, delighted them. One who came in 1680 returned to describe "odoriferous and fragrant Woods, flourishing in perpetual and constant Verdure, vis. the lofty Pine, the sweet smelling Cedar and Cypress trees, the Wild Wallnut or Hiquery tree." Of the first country estates he wrote, "their gardens also begin to be beautified and adorned with such Herbs and Flowers which to the Smell or Eye are pleasing and agreable, vis. the Rose, Tulip, Carnation and Lilly, Etc." Which indicates a pedigree for the flower gardens of the Low Country of South Carolina two centuries and a half long. Governor John Archdale, writing about his province in 1707, says "out of Charles Town for three or four miles is a road called Broadway (now Meeting Street) so delightful, of so great breadth, so pleasantly Green, that I believe no Princes in Europe, by their Art, can make so pleasant a sight for the whole year."

And now after the passing of many years woodland and river shore near Charleston still draw pilgrims of

CHARLESTON CHAMBER OF COMMERCE

IN THE HEART OF FAMOUS MAGNOLIA GARDEN

The moss-covered cypress, the endless blooms of azalea, the still, dark lagoon—all lend infinite charm to this garden of gardens

A SCENE IN OLD CHARLESTON

The old-fashioned city garden with its brick-marked flower beds, its walks, and its setting of picturesque old walls and roofs—and all behind wrought iron gates

beauty. Much of the original natural charm survived because the settlers, early becoming wealthy landed gentry, took thought for the preservation of native trees and flowers and gathered them in extensive gardens as ornaments for their estates. Many plantation gardens beside the rivers, enriched by time and loving care, still cast their mantles of glory through the Low Country of the Carolinas from Wilmington to Beaufort, and have inspired other Carolina towns, cities and even mill villages to create and delight in many gardens, public and private.

In the Low Country, which includes the Sea Islands and extends inland about thirty miles, *Camellia japonica* and *Azalea indica,* planted in a forest setting of magnolia trees and spreading live-oaks festooned with gray Spanish moss, have created gardens different from any elsewhere in the world. Of one of these, Magnolia-of-the-Draytons, on the bank of Ashley River, the ethereal, other-worldly garden of dreams, John Galsworthy has written, "Nothing so free and gracious, so lovely and wistful, nothing so richly colored, yet so ghostlike, exists, planted by the sons of men." Here are acres of *Azalea indica* in many and varied shades through which the paths of the eighteenth century "Ladies' Garden" weave enchanting ways. Writing in 1858 the Reverend John Grimke Drayton, who then owned the garden, says that there were one hundred and twenty distinct varieties of the double camellias and that "many of the plants are now ten feet high and as thick as a holly bush with almost as many flowers as berries." A recent check shows two hundred and fifty-seven distinct double varieties while the single camellias are numberless. During the seventy years since the Rev-

WHERE AZALEA RUNS RIOT AT MIDDLETON PLACE

The famous beds of Azalea indica frame the old manor house, which for all its age is still habitable. Here Carolina history was made

erend Drayton the ten-foot bushes have grown into vast clumps and veritable trees under which one walks in the mid-winter blossom time as through the heart of some enchanted wood.

Just up the river at Middleton Place are equally venerable gardens that link the primeval beauty of the New World forest with the ordered loveliness of an eighteenth-century English manor. Middleton Garden, with formal terrace and charm of many ornamental waters, is famed especially for its wide fields of flowers, *Azalea indica, Camellia japonica,* spiraea, pearl bush, sweet olive, and *Michelia,* the banana shrub. These are all winter-hardy here and in their profusion still "to the Smell or Eye are pleasing and Agreable".

Near the headwaters of the Ashley River is Summerville, the Flower Town of the Pines—unique both as a garden village and as a town that dwells in the heart of a virgin forest it cherishes and protects. The plantation masters of the river created here their summer retreats about 1750, drawn by the fragrance of the long leaf pine which was then deemed a preventive of the fever that haunted the rivers as it shunned the sandy pine ridges. So they protected the virgin forest, and a century later when the settlement, now become a village, was incorporated, the seal bore a pine and the motto *Sacra Pinus Esto.* To this day the stately pines of Summerville are sacred. They now form incomparable setting for gardens of azalea and camellia and have become lofty trellis-work for the purple and white wistaria that is the glory of spring in the Carolinas.

MID THE CYPRESS AT DEAN HALL

Here the towering, mournful trees, the deep, silent waters, the exotic plants and queer walks cast a spell over the visitor who might believe himself in fairyland

The wistarias were probably planted here soon after their introduction from China in 1780, for their stems are often thicker than a man's body; but contrary to popular belief their python-like clasp seems not to harm the trees which still survive, strong and healthy.

THE CHARM OF THE NORTHLAND LIES IN THE TREE PLANTINGS

Mountain laurel, white pine and chestnut furnish the setting for Hendersonville, North Carolina gardens and drives that never seem to lack for care

ASHEVILLE PHOTO CO.

A ROCK GARDEN OF THE NORTHERN STATE

The home of Mrs. U. G. Speed of Asheville, with the beautiful grounds that give a decided modern touch

walled places and rushed beyond the curiously wrought iron gates to fill all the parks and squares with beauty, and modern Charleston is sometimes called the City of Enchanted Gardens. Many old English roses thrive here against sunny walls crowned by the Lady Banksia or the Cherokee rose which came from the East in the long ago. A unique touch in Charleston is the Garden Walk, recently opened, that permits one to wander through connected yards of ancient churches and many sequestered small gardens planted centuries past, and now exquisitely reminiscent of oldest England in their frames of mellowed brick walls and red tiled roofs. Beside the paths are English roses, old fashioned jonquils and iris, and tall magnolia trees haunted by heard but unseen mockingbirds; pervading them is the silent echo of the Old South, the voice of this City.

Here in Summerville there is one garden that revels in long hedges of *Camellia thea.* A few years ago this plant, the tea of China, was grown with commercial success at Summerville. Among the native trees that ornament gardens throughout the coastal region as well as in this beauty spot are the fringe tree, the red-berried cassena, *Ilex vomitoria,* from which the Indians made their dark beverage, dogwood, the Judas tree, crabapple, holly and the giant *Magnolia grandiflora* of the swamps. Among the exotics one meets the California redwood, the camphor, loquat, Japanese maple, ginkgo, candle berry and mimosa. But no gardens have a more haunting fragrance than those with long walks flanked by tall hedges of the sweet flowering olive and canopied with pungent pine.

The ancient love for gardens, brought by the first settlers from the stately homes of England to the river plantations of the Low Country, was likewise made manifest at their "town houses" in Charles Town by means of smaller formal gardens guarded by tall brick walls. Today, the spirit of the gardens has overflown the

Orangeburg links the glory of coastal gardens with the beauty of the sub-Piedmont. On the banks of the upper Edisto has recently been developed a city park of forty acres. It contains a sunken garden under great trees that is a vision of massed *Azalea* (Continued on page 335)

WHERE EVERY STREET IS CANOPIED

Summerville, where the pines and oaks, draped with moss, make every corner a beautiful garden

MAMMALS OF THE LAND, AIR AND SEA

BY E. BURNHAM CHAMBERLAIN

THE DAINTIEST OF CAROLINA CREATURES
The Virginia deer, who is still found in abundance in the forests and the swamps

THE INDIANS "go out to Sea, and get upon a Whale's back, and peg or plug his Spouts and so kill him." And, "If a Dog . . . run into a Bear, he is not good, for the best Dog in Europe is nothing in their Pawes, but if they ever get him in their Clutches, they blow his Skin from his Flesh, like a Bladder, and often kill him. . . ." "But roast a Bat on a Skewer, then pull the Skin off, and make the child that eats Dirt, eat the roasted Bearmouse, and he will never eat dirt again."

Thus we find some amusing and far-fetched stories in the earlier writers, and many are the interesting references to the mammals of Carolina. All tend to show the abundance of animal life that was existing at that time. Such writers as Lawson, quoted above, Catesby, Walter, Bartram, and Drayton tell us of the Carolina of the eighteenth century. In the early days of that century Carolina was a land of magnitude, extending from the upper part of present-day Florida north beyond the North Carolina line and westward more or less indefinitely. For years following the definite marking of boundaries and the division into two states the term "Carolina" was used, and it seems peculiarly fitting that we again unite the two states in discussing their mammals.

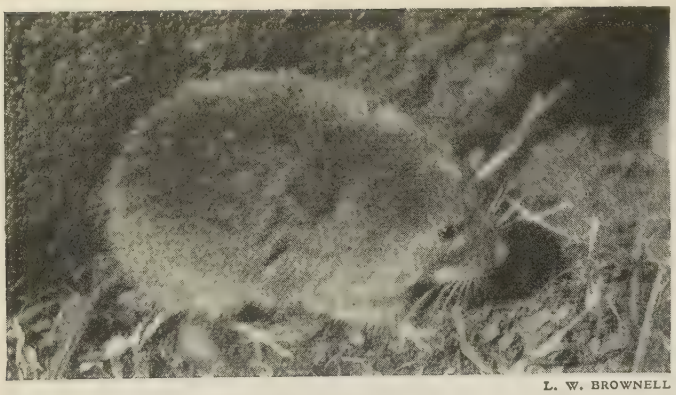
SURPRISED
A mirror portrait of a coon

N. Y. ZOO. SOCIETY

BRE'R FOX, THE RED 'UN
He has furnished sport for three generations of Carolinians, but surprisingly enough, still survives

Carolina has furnished the type specimens of nineteen present-day mammals, these including five mice, four squirrels, two shrews, two whales, and one beaver, rabbit, weasel, otter, and skunk. To the region as a whole is credited at least eighty-three species and subspecies, many of which are of more than passing interest to the Nature lover and naturalist. The student will doubtless find variations or geographical races as yet undescribed, perhaps on the coastal islands. Few regions in the United States have been so little studied as this section, despite its early settlement.

Such varied ecological conditions as are here present are hardly to be found elsewhere east of the Rockies. From the ocean extend the coastal plain with its palmettoes and mossy cypress swamps, then the pine lands,



L. W. BROWNELL

MEADOW MOUSE LOOKING TIMID

One of the smaller denizens of the forest floor poses unwillingly before the camera

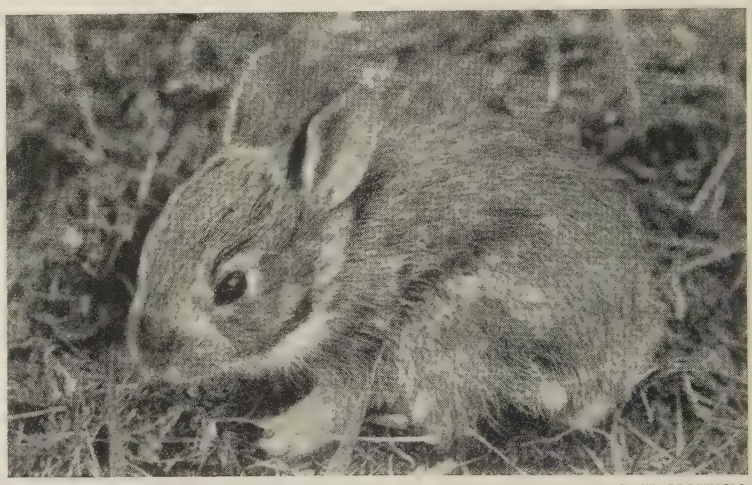
L. W. BROWNELL

A BUSY CAROLINIAN

The gray squirrel is common in both states in the wooded sections

the red-clay hills, the sand belt, and beyond the rolling hills of the Piedmont. Farther west swell the foothills of the Blue Ridge and then the six-thousand-foot mountain peaks—all within the borders of Carolina. Could such a land be other than fascinating? Nor does it fail to hold much of interest in the way of animal life.

In the early days of the settlers this province had its buffalo, its elk, panther, wolf, and beaver. Elk and buffalo have long since passed to the Great Beyond, and the others have already followed or are on the very threshold. Two large quadrupeds alone survive, the black or hog bear and the Virginia deer. Although the range of these animals has been greatly reduced, the bear is still to be found in a few areas in the wilder mountains and heavy swamps, while the deer remains abundant in parts of the Carolina Low Country. It is very unfortunate that certain plantation owners, resentful of the damage done by these animals to gardens and flower beds, are killing bucks, does, and fawns. Such action is bad enough in itself but worse in the example thus set for poorer neighbors.



L. W. BROWNELL

A GENTLEMAN OF MANY PARTS

The young cottontail has both New England and southern relatives in Carolina, and is found everywhere

Most abundant among the lesser animals is the cottontail. The New England cottontail occurs among the high mountains, but the Eastern cottontail is the familiar animal of the Low Country. Along the coast and well inland along the river swamps the cottontail's water-loving relative, the swamp rabbit, appears. The cottontail is up and away on the first alarm, but this fellow trusts to his ability to lie low and skulk quietly away, or, given the chance, to take to the water and swim to safety with just the top of his head exposed and his ears laid back.

One would hesitate even to mention such pests as the house rat and mouse, abundant throughout the civilized world, but for the fact that their more decent, aristocratic relatives, the black and roof rats, are found in and about many of the older seaport and inland towns. Indeed, until fairly recent years the roof rat was the common species over a great part of the region.

Only in limited areas do the large, handsome woodrats occur. In a few mountain localities the Pennsylvania wood rat has been found, his presence sometimes betrayed by a rather small pile of sticks at the mouth of some crevice among the rocks. Among the river swamps of the southern third of the coast country, and extending scarcely twenty miles inland, may be encountered small colonies, of perhaps half a dozen nests, of the Florida woodrat. On the ground about old stumps or twenty feet up in the vines thin nests of sticks are built, some several feet in diameter, with two or more openings. Shake one of these nests vigorously and out will flash a large-eyed, soft-furred rat, perhaps a female with several young clinging tightly to her as she climbs higher to safety.

For some unknown reason the lowlands of lower Carolina apparently have never known the muskrat. Bachman tells us that he never found it nearer than seventy miles from the coast, and the same condition holds good to-day. One would imagine that the vast, abandoned rice-fields of the coast might support many muskrats, but such is not the case. Farther inland, however, we will find this animal common in many localities, and in the northeast section of the province exists a large Dismal Swamp race.

Over most of the region occurs either the common meadow mouse or its relative, the pine mouse, the first in wet meadows and in the uplands, the other down

L. W. BROWNELL

A COTTON RAT AT WORK

He inhabits the hedges and the overgrown fields

L. W. BROWNELL

THE MASTER OF ALL BURROWERS

The common mole is often found in all sections, busy at his engineering problems

N. Y. ZOOLOGICAL SOCIETY

HE NEVER KNEW THE RICE-FIELDS

Although the abandoned coastal swamps would appear ideal for the muskrat, he is found only inland

toward the sea, where it meets, in the Currituck region, the Albemarle meadow mouse. Nor do these comprise all of the small, short-tailed runners of burrow and tunnel, for the higher mountains offer that beautiful little creature, the Carolina form of the red-backed mouse, and the rarer lemming mice. Other varieties include those entrancing little sprites, the deer or whitefooted mice. Among the higher mountains dwells the Cloudland whitefoot, while nearer the sea is encountered in turn the common whitefoot and his larger relative, the cotton mouse. Over most of the region, although in more restricted areas and in smaller numbers, the prettily-colored golden mouse is found. Well distributed, also, is that dainty little imitator of the whitefoot, the tiny harvest mouse, he of the grooved incisors. This lover of grassy fields spends much of his time below ground, traversing the burrows of mole and pine mouse. And not to be overlooked are those queer, long-tailed jumpers, the Northern, Roan Mountain, and Carolinian species. The first two are confined mainly to the higher mountains and the last to the Upper Austral Zone.

One of the most abundant rodents of the entire region, excepting the mountain country, is that heavy-set, grizzled-gray inhabitant of hedges and overgrown fields, the cotton rat; while in the coastal marshes and the river bottoms is found the rice rat, much like a young house rat in appearance, but with habits decidedly aquatic.

The squirrels of Carolina range from the red squirrel of the mountains, for some unknown reason called the boomer, down to the handsome southern fox squirrel of the swamp ridges and coastal islands. In the mountains occur also the northern fox squirrel, lacking the white-tipped nose and ears of his larger southern relative. From one end of the region to the other range the common gray or cat squirrel, and that master glider, the charming little flying member of the race.

Among the four-footed insectivores are such interesting forms as the hairy-tailed Brewer mole and that fellow of the many-fingered nose, the star-nosed mole. Both are known from comparatively few records, mainly in the mountains, while the entire region is covered by the common Howell mole. Those energetic two-fisted mites, the shrews, are represented by four short-tailed animals, the common, Carolina, and Dismal Swamp blarinas and the tiny least shrew. Peculiar to the mountains are the long-tailed smoky and masked shrews. One of the rarest animals of the entire region is the long-tailed Bachman shrew. This small mammal was first described by the well-loved naturalist, for whom it is named, from a specimen dug up by laborers in the Santee swamp and from another removed from the throat of a merganser taken in Colleton County. Since that day only a few have come to light, notably near Raleigh, where the species was rediscovered by C. S. and H. H. Brimley, authors of an article in this issue.

Taking to the air, in the interest of those other insect-eaters, the bats, we find that Carolina lists about a dozen species. The commonest of these over the region as a whole are the red and twilight bats, while in certain areas the mahogany, free-tail, little brown, and Georgia bat occur in numbers. Others less common and often local in distribution are such forms as the hoary, Say, silver-haired, big brown, and big-eared. Perhaps one of the most interesting, from the standpoint of the visitor, is the free-tailed bat, so called because the interfemoral

membrane does not extend to the tip of the tail. This animal rarely ranges higher than midway of the province, and, while the red bat is a forest dweller, the free-tail confines himself mainly to the vicinity of towns and cities.

Among the fur bearers are those well known friends, the 'possum, 'coon, mink, and gray fox, distributed over the region as a whole, while in the mountains occur the common and little spotted skunks, red foxes, and weasels. Less common, and requiring more protection if it is to be saved, is the otter. Both the common skunk and weasel extend down into the coastal plain, at least in the lower half of Carolina, but there they are quite scarce and their capture never fails to excite comment. A carnivore common over much of the region, and particularly in the Carolina Low Country, is the wild cat. Indeed, so common and bold is this bob-tailed hunter that one plantation owner is installing four large spotlights, whose bright beams shine throughout the night on his kennels, solely to protect his timid house dogs.

The marine mammals of Carolina are almost wholly cetaceans, the lone exception, the harbor seal, occurring only occasionally. Of the large whales, records of occurrence in the early days are not scarce, but now a whale of any size is worthy of considerable notice. In fairly recent years have been found the right, finback, and sperm whales, among the larger, and the pygmy sperm, grampus, True's beaked, and Cuvier's whale, among the smaller species. Of the commoner forms, many travelers by sea have seen such offshore animals as the spotted and common dolphins and the larger southern blackfish or pilot whale. Traveling in schools or herds, these last named animals sometimes wash ashore, after becoming trapped in shoal water. Ten or twelve of these creatures, ranging in length from twelve to seventeen feet, make indeed an impressive sight when strung along a white beach at high water mark.

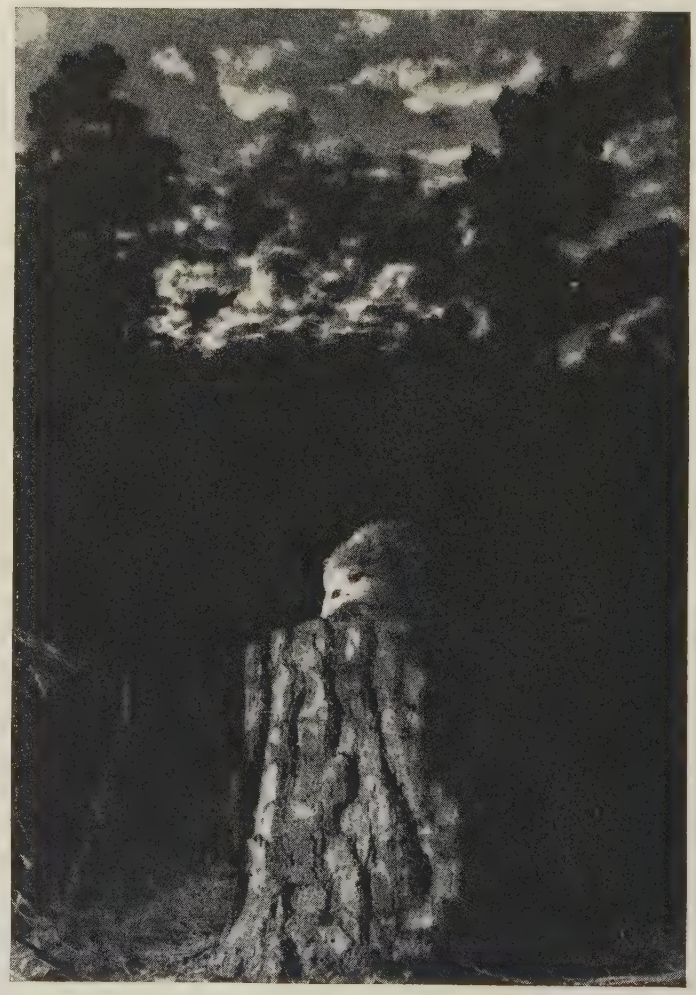
Of all Carolina's marine mammals none is so well known as the bottle-nosed dolphin. This inoffensive animal, the "porpoise" of the native Carolinian, is abundant along the coast and in the inlets and harbors. Here these "porpoises" may be seen, singly, in twos, threes, or larger numbers, rolling along just beyond the surf; and thus seen, they help us to understand some of the sea-serpent yarns of the early mariners, because it indeed requires little effort to imagine a line of these animals to be the body of a long, slender monster, undulating in and out of the rolling waves.

The "porpoise" enters the shallow waters of tidal creeks and rivers for the purpose of feeding, and in its eagerness often rushes the fish out on the mud banks and seizes them as they flop back into the water. The story is told of a negro fisherman who, going up a shallow, narrow creek, met a "porpoise" coming down. Thinking to stop the animal, the negro swung his boat squarely across the creek.

There wasn't room beneath and there wasn't room around either end, but—there was room above, and through the flimsy sail the "porpoise" leaped leaving a large jagged hole to mark his going.

These are our mammals of land, air, and water. Some have gone forever, while others, like the bear, otter, and fox squirrel, are in need of protection. Nor should this be denied them, for we as a whole are beginning to realize that in the wild life about us we have a most valuable asset, which satisfies the aesthetic sense as well as serving materially by attracting people to the states. Those who have had the good fortune to visit some of our national parks will readily testify to the interest aroused by the presence of buffalo, deer, bear, and lesser animals.

Rapidly increasing in numbers are those who hunt without the gun, using instead camera, field glasses, and notebook. Surely these lovers of the outdoors are as fully entitled to their share of our wild life as are the wielders of firearms. Happily, the day of conservation is at hand, and in this province is a golden opportunity to protect, study, and enjoy.



WHEN LUNA GAVE HIM AWAY C. C. ALSTON

An unusual photograph of the opossum captured in the moonlight

CAROLINA FEATHERS

WHERE THE AVIAN LEGIONS ARE THICKEST

BY ALEXANDER SPRUNT, JR.

OTTILIE KEIL

THE MOCKINGBIRD

Moonlight nights fairly drip with his sweet song

MORE true species of birds have been made known to science from South Carolina than from any other commonwealth of the United States! This is a fact which speaks volumes for the history of ornithology in Carolina and America.

Carolina is rich in history. The part which she played in the making of the nation is an enviable one and no less interesting to many is her position of record achievement in the field of natural history. Her claim to prominence therein would be warranted by the one fact mentioned above alone, but there are other phases to be considered also.

In the early days, what was known as the Province of Carolina composed that area south of Virginia to Florida, in other words, what is now known as North and South Carolina, and Georgia. The great bulk of work done by pioneer ornithologists was, for obvious reasons, accomplished along the coast region. It was many years before the interior was penetrated to any distance. Even before the ornithologists came, in the days when the Spaniards attempted colonization at the mouth of the Santee River in 1521 and later, those militaristic adventurers noted the abundance of bird life in reports of the expeditions. With the coming of the English, and the permanent settlement of the Carolinas, William Hilton, writing in 1664, says that the country "abounds with Turkeys, Quails, Curleues, Plovers, Teile, Herons; and the Indians say in winter with Swans, Geese, Cranes, Duck and Mallard, and inumerable of other water-fowls, whose name we know not." It was Hilton who noted flocks of "Parrakeetos," the birds which were later known as Carolina paroquets and which have lately become extinct.

Hilton, however, was not an ornithologist. The first scientific attempt published in early times was Mark Catesby's *Natural History of Carolina, Florida and the Bahama Islands,* published in 1731-43. Catesby figured,

L. W. BROWNELL

THE DEFIANT HERON

Many of his tribe are in Carolina—the great blue, little blue, Louisiana, night, snowy, and green

N. Y. ZOOLOGICAL SOCIETY

BIRD OF THE COAST

During both its southern and northern migrations the far-ranging gannet fishes along the Carolina coast

N. Y. ZOOLOGICAL SOCIETY

THE AMPLE-BEAKED FISHERMEN

The eastern brown pelicans are familiar sights along Carolina shores

as well as wrote of, the birds he saw and nearly all of them were described from what is now South Carolina. He worked here in 1722, and it was he who furnished the data from which Linnaeus described the birds.

The geographical and topographical features of Carolina have ever been admirably suited to avian wants. From the sounds, barrier islands, marshes and mudflats of the coast, through the cypress swamps, pinelands and sandhills of the interior, the land sweeps upward to the highest peak in eastern North America, Mount Mitchell, in western North Carolina. From the life of sub-tropical jungles along the ocean to that of the high mountain peaks, with all intermediate ramifications, birds of hundreds of species abound. Ornithologists enjoy within these boundaries a diversity of field experiences seldom equalled anywhere.

L. W. BROWNELL

SOUTHLAND SINGER

Everyone loves the bluebird, which raises its young in Carolina land

The notes of that tireless traveller, William Bartram, who, in 1773, passed through Carolina, contain the next comments of importance in regard to bird life, but natural history in all of its phases interested him and he did not specialize in ornithology. The Father of American Ornithology, Alexander Wilson, did not study in the Carolinas to any extent but passed on into Georgia, for, in his time, the latter was a separate unit. What notes he did make however, have been found to be singularly accurate. It remained for his more famous contemporary, John James Audubon, to devote considerable time to this favored section. The American Woodsman, as he was fond of being called, made several trips to the vicinity of Charleston, where he combined forces with his admiring friend, the Reverend John Bachman of that city. The field work of Dr. Bachman furnished much material for Audubon's monumental *Birds of America* and the zealous clergyman-ornithologist himself discovered four new birds about his own city. These were described by Audubon and two of them were named, in honor of their discoverer, Bachman's sparrow and Bachman's warbler. Thus we see that a citizen of Carolina had a considerable part in the making of the most famous of bird books. Audubon himself discovered three species in the vicinity of Charleston that were new to science.

Modern ornithology in Carolina, and indeed, throughout the South, owes a deep debt to its late indefatigable student, Arthur T. Wayne. Though he did not discover

ASHEVILLE CHAMBER OF COMMERCE

THE WILD TURKEY IN HIS FORESTS

No more majestic creature struts through the Carolina woodlands than this much persecuted bird

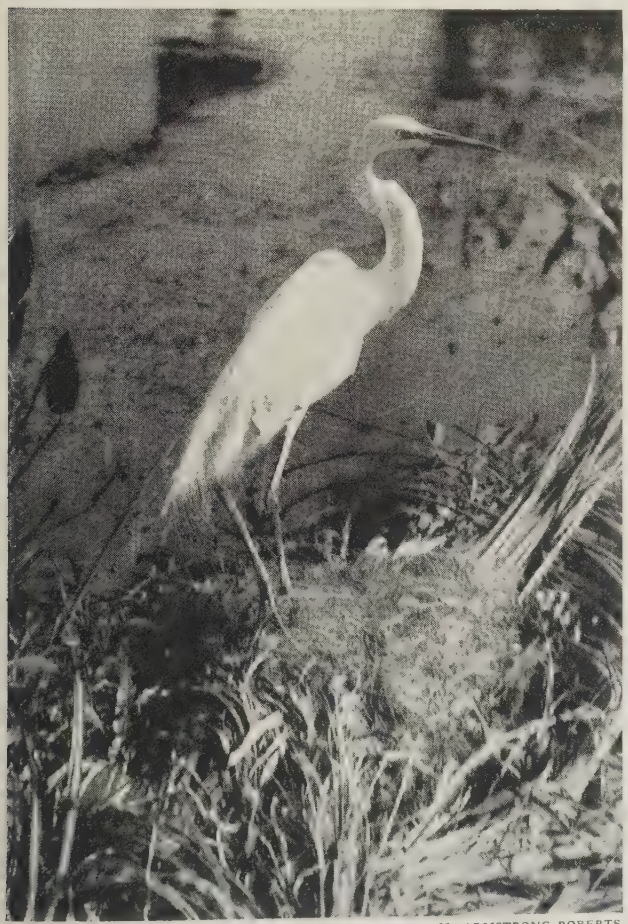
any new species, such being well-nigh impossible in this day and time in America, Mr. Wayne added to the avifauna of South Carolina over fifty species which had not been seen or recorded by any previous observer. For nearly fifty years he labored earnestly and devotedly in the interests of Carolina birds, and his knowledge of them, his contributions in written form and his superb collection will ever be shining lights in the history of the birds of his native state. In North Carolina, the work and writings of the Messrs. Brimley and T. Gilbert Pearson have added much to the knowledge of the birds of that state. Our limited space forbids further discussion of the activities of other ornithologists who have helped to make us familiar with many species of Carolina birds.

With this background of ornithological history, it is not surprising that the term Carolina figures in the very names of American birds today. We have the Carolina paroquet, the Carolina rail, the Carolina junco, the Carolina wren and the Carolina chickadee. The amateur may not realize that there are eight other species which have, as their specific name, *carolina* or its derivatives. So, combining common and scientific names, we have thirteen American birds which are connected directly with Carolina by the use of the name itself. It is plain then, from the above outline of fact, that no part of this country need be prouder of its past in ornithological history than the Carolinas. So much for the past.

JAMES E. THOMPSON

DENIZEN OF THE CRAGS AND PEAKS

A young golden eagle screams defiance of the world from his windswept bald



H. ARMSTRONG ROBERTS

THE AMERICAN EGRET ON HIS SHORES

Probably the most stately and beautiful of all the feathered folk in Carolina

This is, essentially, a practical age. People on the whole are not so interested in what has gone before as that which exists today. It is an age of extensive travel; people are ever and always on the move, they want to see the country and many want to see the birds. The birds of Carolina are worth seeing.

More than three hundred and fifty kinds have been recorded from the Carolinas. Along the coastline one may see the swarming ducks, geese and swans of Currituck; the teeming colonies of pelicans, terns and skimmers of Bull's Bay and St. Helena Sound. The observer may revel in the multitudinous population of heron rookeries, whether located on palmetto-studded "hammocks" in the salt marshes or set amid the magnificent, moss-bannered cypress lagoons farther inland. In these enchanted spots, ibises, gallinules and snake-birds mingle with egrets and herons, while prothonotary, yellow-throated and Wayne's warblers flit through the cypress tops to

ROBERT L. MASON

THE CAROLINA JUNCO

The bird of the mountains that often nests near humans, and fears no man

H. AND E. PITTMAN

THE RAIL FROM VIRGINIA

Another species, that lives in the same marshes, was named for the Carolinas

IN THE CHESTNUT AND PINE

May be found the cedar waxwing, carefully tending her nest

AND THE TURKEY VULTURE

No noon-tide scene would be complete without his sable majesty drifting against the blue

add tiny flashes of animated color amid their larger neighbors.

In city, town and country the incomparable mockingbird is an abundant and well-loved resident. Perhaps no other bird so attracts and charms our northern visitors as does this far-famed songster. Moonlight nights fairly drip with its matchless music; whether heard from a dense jungle of a barrier island or a chimney top in the city it is, at once, appealing and delightful. The marvellously colored little nonpareil, or painted bunting, is common throughout spring and summer, building its nest in fig trees of a city yard, or in the hedgerows of a country lane. In Carolina there is a breath of the tropics mingled with the life of the temperate zone and in the nonpareil, with its brilliant dress, the semi-tropics have their most striking representative.

Contrary to the generally accepted idea, a city dweller in the Carolinas need not be one who lacks opportunity. Not long ago I compiled a list of the various kinds of birds seen and recorded from within the city limits of Charleston, South Carolina. Now Charleston does not cover a great deal of ground, it lies on a narrow peninsula all but surrounded by water, and the limits are very restricted. Nevertheless, the fact remains that two hundred and twelve species have been seen from within these limits! While it is true that some of these have been noted only once or twice, and many others but a few times, it is quite enough that they have been seen. Numerically, it is a very respectable list for any locality, particularly for one city.

Charleston is a city of gardens. Behind their high old walls and wrought iron gates, they attract hundreds of the city's visitors and are frequented by avian, as well as human tourists. Of all the gardens of this famous old city, there is one that takes front rank in the numbers of birds seen in it and that because its owner is thoroughly alive to its possibilities. This garden is on Legare Street, in the heart of old-time Charleston and its owner is that gifted portrayer of Low Country wild-life, that keen field naturalist, Herbert Ravenel Sass. In this one garden he has noted one hundred and sixteen kinds of birds. Cardinals and mockingbirds, and (Continued on page 343)

L. W. BROWNELL

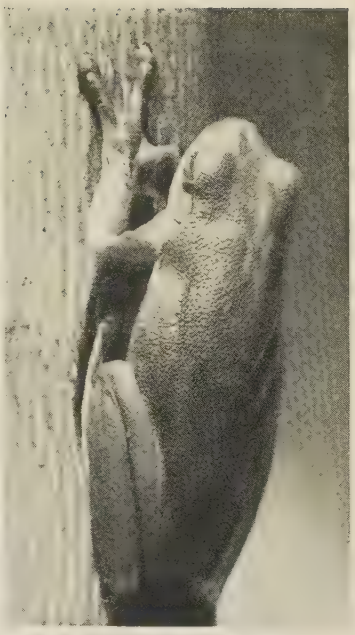
THE SPOTTED SANDPIPER AT HER NEST

Carolina beaches know these soft-voiced waders

CAROLINA REPTILES

TWO STATES BOAST OF NUMEROUS VARIETIES

BY PETER GETHING



THE TREE FROG
An amphibian of distinction that lends its green beauty to the Carolina forests and swamps. He represents the age in Time that closely followed the reptile age

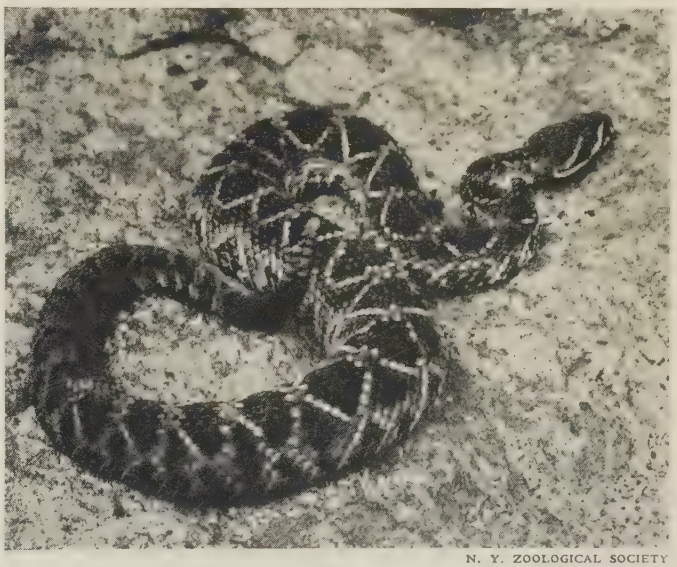
L. W. BROWNELL

THE CAROLINAS, ranging as they do from the towering peaks of the Blue Ridge Mountains to the swamps, marshes, and barrier islands of the coast, offer to the student of herpetology as wide a variety of subjects as may be found anywhere in this country.

Of the fifty-four species of the turtle family found in the United States, eighteen are found in the Carolinas. The loggerhead turtle, weighing in its mature state anywhere from two hundred and fifty to five hundred pounds, is a frequent sight at night during its breeding season when this giant chelonian crawls with lumbering pace out of the ocean to lay its eggs, ranging in number from fifty to several hundred. There are few more impressive sights than to watch on a moonlit night the labored progress of the creature as it makes its way to the soft sand above the high-water mark. Closely akin to the loggerhead, the green turtle, while not as frequent a visitor as its cousin, is occasionally seen carrying out its maternal duties along the shores of Carolina.

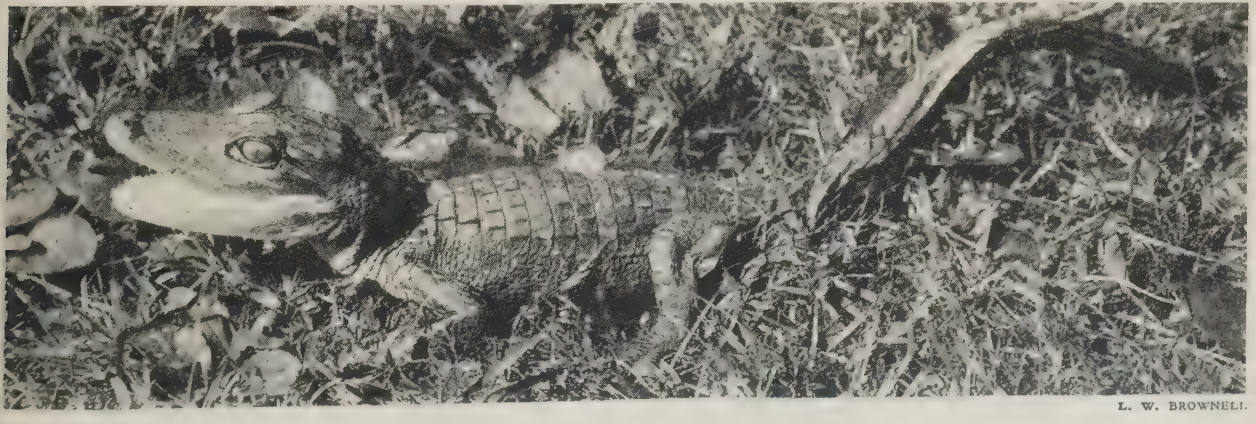
Among the smaller members of the tribe Chelonia, the diamond-backed terrapin, beloved of epicures, lives in the marshes and salt creeks of the Carolina Low Country and is comparatively unmolested by turtle-hunters. The beautifully-marked box turtle, *Testudo carolina,* is extremely common and its habit of protecting itself from its enemies by closing itself up in its box-like shell is a matter of common knowledge to all small boys.

Only one member of the tortoise group is found in Carolina. The gopher tortoise is a typical example, being exclusively terrestrial, slow-moving,



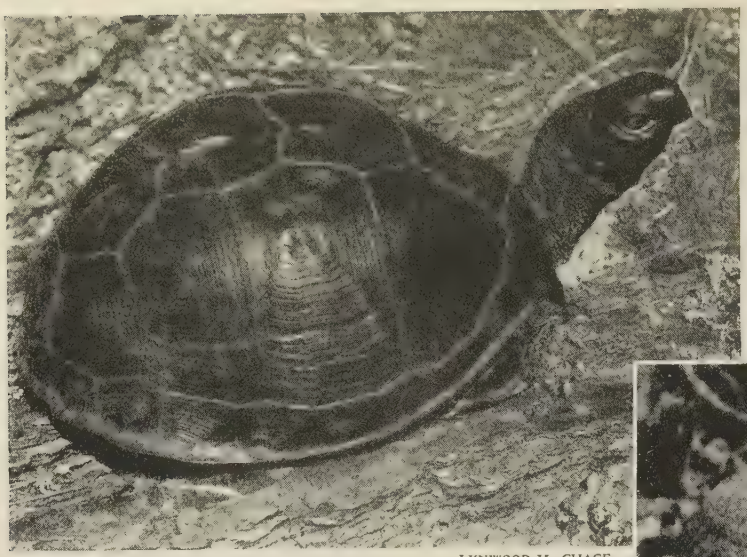
N. Y. ZOOLOGICAL SOCIETY

THE DIAMOND-BACKED RATTLER
Most deadly and feared of all the pit-vipers, and one of the forty-two Carolina snake varieties



L. W. BROWNELL

THE GENTLEMAN ROARER OF THE SWAMPS
A youthful member of the alligator tribe, which is rapidly disappearing from the waterways of the South. This race deserves protection as a notable remnant of prehistoric days



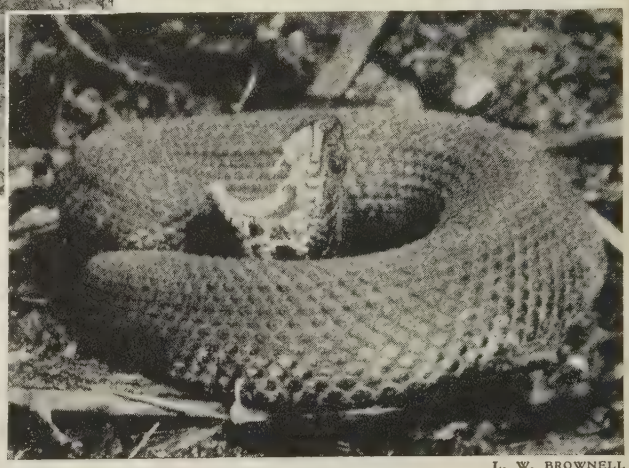
LYNWOOD M. CHACE

ALL SMALL BOYS KNOW HIM

The beautifully marked box turtle, a fortress in itself, is a Carolina denizen

and totally herbivorous. As in the case of most tortoises, this chelonian is gifted with more intelligence than its turtle relatives and can be made an interesting and thoroughly satisfactory pet.

Among the saurians, the alligator still dwells in the Low Country, and frequently can be seen in the lagoons, rivers and ricefield canals, the last representative of a race once powerful but now slowly becoming extinct. In recent years, skin-hunters have plied their trade in our waters without any protest from local authorities and it is only a question of time before this species will be reduced to time-blackened specimens in museums. There is no more impressive note in the world than the roar of a bull alligator. Assisted by the wild grandeur of the locale, at eventide, it brings to one's mind the awe-inspiring scenes of half a million years ago when the 'gator was only one member of a large tribe of gigantic saurians that are now only unpronounceable names. Failure to conserve this, the last of that group, is most reprehensible, yet it is difficult to impress this fact on the minds of planters who lose an occasional hog.



L. W. BROWNELL

COTTONMOUTH SHOWS HIS FANGS

He often disputes the path with man, and strikes without warning

Chief amongst the seven species of smaller saurians prevalent here is the American chameleon, appropriately named *Anolis carolinensis,* since it is extremely common everywhere in the coastal region of Carolina. More erroneous information is held regarding the color changes of this reptile than concerning snakes, which is saying a great deal; the fact is that the color changes are no more influenced by the creatures' surroundings than they are by the nebular hypothesis.

L. W. BROWNELL

THE RED-HEADED LIZARD POSES

It is most unusual to find him still long enough for a photograph. He grows largest in the Carolinas

The red-headed lizard, known locally as the "scorpion," attains in this section of the country its largest size, and undergoes its most complete color changes. Owing to its extreme timidity and the quickness with which it flashes from view, less is known here of the habits of this saurian than of any of the others. Raymond L. Ditmars, one of the world's greatest authorities on reptiles, speaks in his valuable work, *The Reptile Book,* of the difficulties encountered in capturing this species for purposes of observation.

It is in the realms of the snake order, however, that the Carolinas are a veritable happy hunting ground for students of reptiles. From the lordly diamond-backed rattlesnake to the tiny worm-snake, more than forty-two species are found in these two states.

Among the venomous varieties, the pit-vipers are represented by the diamond-backed and timber rattlers, the copperhead, the

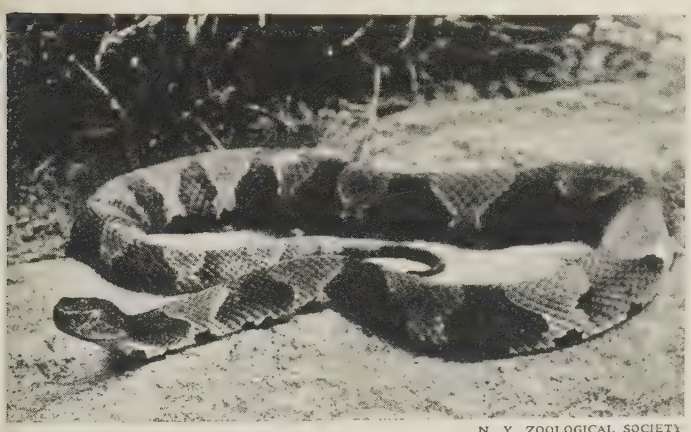
cotton-mouth moccasin, and the pygmy or ground rattlesnake. In addition is found one of the first cousins of the deadly cobra—the coral snake. This beautifully-colored reptile with its black, red and yellow bands is often turned up while fields are being plowed. Although it was erroneously regarded by the old authorities on reptiles as harmless, it is in reality one of the most dangerously venomous snakes of all. Its fangs are extremely short and its mode of attack differs from that of the vipers in that instead of striking and withdrawing quickly, it retains its hold and, in the manner of its larger cousins, moves its jaws in a chewing movement, thus grinding its deadly poison into the wounds. Its venom acts on the nervous system of its victim instead of in the bloodstream, and it is popularly supposed that it is this fact that makes it more dangerous to man, since the action of the poison is quicker in its distribution.

The rattlers are too well known to merit more than mention here, but the water moccasin or "cotton-mouth", as it is better known in this region, deserves a word if only for

N. Y. ZOOLOGICAL SOCIETY

THE BROWN WATER SNAKE AND FAMILY

An inconspicuous, but harmless lover of the swamps and lowlands, and a snappy dresser when young



N. Y. ZOOLOGICAL SOCIETY

THE FAMED COPPERHEAD

He brooks no interference from either man or beast

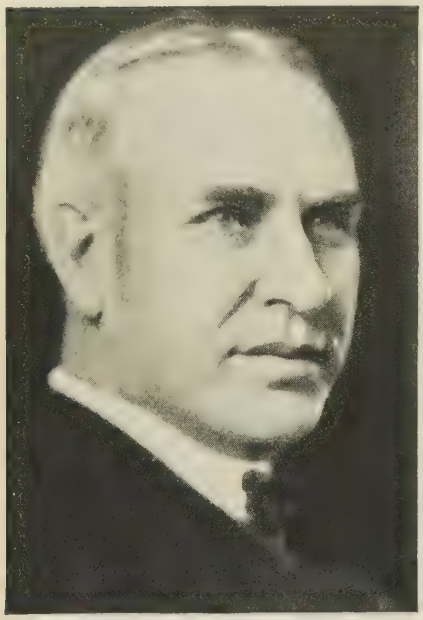
the fact that contrary to the usual actions of its near cousins in slipping away at the approach of man, this species will often dispute the path with him. Nor is there any warning of its attack, for its protective coloration renders it a most inconspicuous object until it is too late. The writer, while on a recent fishing trip, had a narrow escape from one of these reptiles. He had brought his punt to within a few inches of a cottonwood tree that raised its stubby height out of the creek and, in endeavoring to avoid a collision, put his hand on the rounded surface of the tree-top when, to his horror, he saw coiled among the shoots that grew upward from this tree, and within six inches of his hand, a large water moccasin. Fortunately the day was cold and the reptile was inert; otherwise there is a probability that there would have been another writer for this article.

Among the non-venomous snakes, and closely resembling in appearance the coral snake, is the scarlet king snake. It is difficult to tell it from the coral without more than a cursory glance. Its habit of burrowing as does the coral snake results in many of these comparatively (Continued on page 338)

N. Y. ZOOLOGICAL SOCIETY

THE SLOW-MOVING GOPHER TORTOISE

A terrestrial, herb-eating member of an order well represented in the Tarheel and Palmetto States



"4,000,000 acres must be returned to timber production . . . "

CAROLINAS PLEDGED TO CONSERVATION

BOTH GOVERNORS CHAMPION CAUSE OF NATURE-LOVERS

"The forests and the wild life are a blessing . . . "

By O. MAX GARDNER

Governor of North Carolina

ONE of the primary functions of government should be to work toward insuring the highest social standards and happiness of her people. At the same time, the government should strive to conserve the economic value in land that cannot be maintained without a certain degree of participation by the State. An adequate system of State Forests, Parks, and Game Refuges will help to solve these problems.

Around 4,000,000 acres, or approximately one-fifth of our forest lands in North Carolina, are said to be unproductive today. These areas must be returned to timber production if the State meets the responsibility that is hers. Certain of these areas, under scientific management and properly distributed in a State system, will afford an example which will be profitable to private landowners in obtaining the highest possible returns from their holdings.

We have many beautiful waterfalls, outstanding features of landscape, unique types of forest growth, places of historic interest, and other natural features that should be permanently preserved for the benefit and enjoyment of the people. Many of these areas should become units in a system of State-owned lands. The protection of streams for navigation, water power, city water supplies, public hunting grounds, and the protection of fish life are served by the development of an adequate forest, park, and refuge system.

By IRA C. BLACKWOOD

Governor of South Carolina

THE CONSERVATION of our natural resources is a duty which we owe not only to ourselves but to the future. The protection of our forests, and reforestation, are of vital importance. Along with these naturally is included the preservation of our flora and fauna. It will be my policy as Governor to lend my encouragement and support to the efforts which my State is making along conservation lines. I am very happy to say that we have hunting and fishing preserves which attract some of the most prominent gentlemen in the nation to acquire homes here for the winter season. Our flora, nurtured in a fertile soil and a climate that is uniform and gentle, is profuse, unique and splendid to a degree that it is world-famed, and is a fitting setting for our plentiful fauna—a combination coloring our State with a rare beauty.

It is only within recent years that we have realized the importance of these things of Nature which have been bestowed upon us and which for years we so recklessly destroyed. South Carolina now has adequate laws for their protection and these laws are being enforced. The forests and the wild life are a very great blessing to us. To retain them is not only a privilege but the duty of the State. Wantonly to destroy them is a crime not only against the laws of the State but against the laws of Nature, and against the alienable rights of those who are to come after us.

ASHEVILLE PHOTO CO.

THE LURE OF THE SMOKIES—THE GREATEST PEAKS OF THE EAST

Magnificent distances, great rolling peaks, warm sunshine, but best of all, the clean, fresh air that brings new life to a man

OLD SMOKY

BY ROBERT LINDSAY MASON

WHEN De Soto, first tourist to the Great Smokies, entered the Savannah River in the early summer of 1540 and made his tedious way northwestward through the almost impenetrable bush of the Blue Ridge Mountains and Toxaway to the western part of North Carolina, the hospitable redskins made him presents of great baskets of serviceberries. He declared them to be "the best mulberries he ever ate!" The Cherokees had picked them up under Kuwahi or "Mulberry Place"—the present Clingman Dome. In addition they offered seven hundred "gallinas", or wild turkeys, to the great Spanish explorer's famished men. Twenty-five years later when Juan Pardo retraced De Soto's wanderings, the red men proffered the bloody hatchet and the scalping knife; they had learned their lesson from the terrible fowling-pieces of the invaders that belched flame and slaughter.

De Soto, a stern man of few words, was driving his cavalcade hard in search of gold which he heard the simple savages gave away for a few worthless trinkets. Old Smoky's impressive scenery and remarkable flora did not interest the Spaniard beyond the serviceberries, nor her wild life except in so far as roast gallina appeased hungry soldiers. The same indifference was shown by those who came after, and it is true, although it seems incredible, that this gigantic mountain mass of thirty-two peaks, towering more than a mile above sea-level and uncut by a single stream for sixty-five miles, with its connecting gaps more than five thousand feet at every point, remained for centuries in the very heart of our civilization practically without discovery by ordinary human beings.

Naturally, a rugged monolith of such phenomenal geological composition could not escape attention by scientists like LeConte, Bartram, Audubon, and Michaux; nor long hunters like Boone of the lower Yadkin, and Crockett; nor such hardy explorers as Guyot, Clingman, and Dr. Elisha Mitchell; but the general public passed by its serrated, cloud-cleaving skyline with but a transient exclamation of wonder until three years ago when things began to happen.

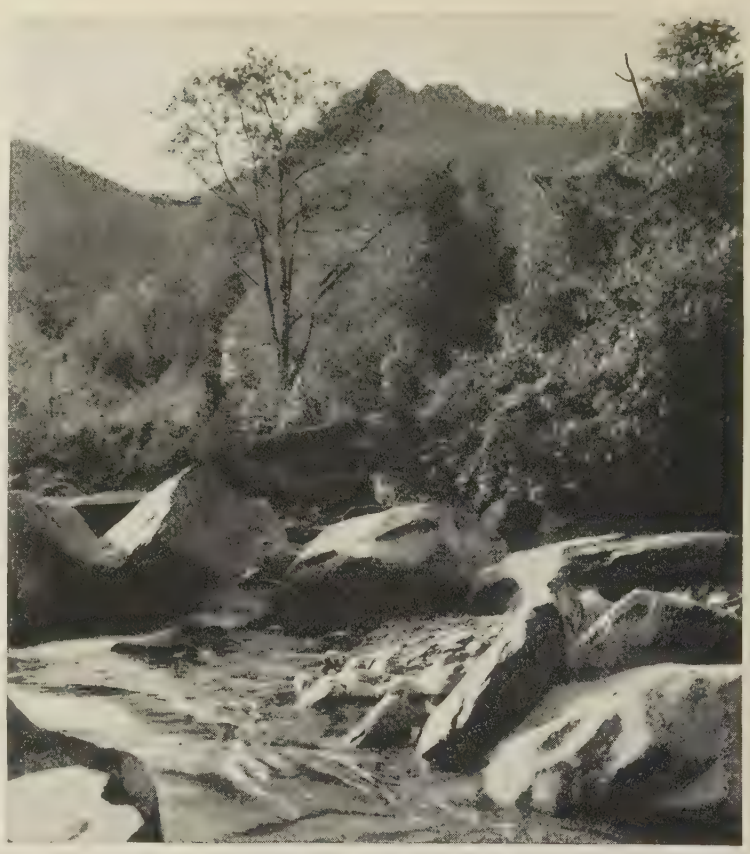
In 1927 North Carolina and Tennessee, sister states across this rugged state-line watershed, impelled by public enthusiasm, began the work of purchasing more than four hundred thousand acres of untamed wilderness to be presented to the Federal Government as the Great Smoky Mountains National Park. U. S. Foresters are already in charge of nearly half of the required acreage necessary for permanent operation. It is the first instance of two states joining hands to create a National Park saddled astride their state line.

This important movement typifies the trend of our modern civilization to preserve natural educational museums retaining within comprehensive bounds their ideal specimen representations of Nature's encyclopedia. In this one immense Great Smoky volume the knowledge-seeker, or the scenic thrill-hunter, may have his field from Maine to Florida within one compact scope by merely climbing a mile up Nature's bookshelves into the clouds. If he can do this without gasping at her immensities on the way, he would be dull indeed.

The camper, or hiker, bent upon conquering the terrors of a startling wilderness, may also have his innings

on the tortuous ridges when they are clad in the frost-crusted jewels of winter at 30° below zero or, if he prefers, on the more easy-going gaps that lead toward grassy "balds" fringed with stunted trees, hundreds of years old, whose mossy, lichen-clothed flanks are within reach of a man's hand. Here is an abundance of fuel for his campfire in milder weather; prismatic dawns above the jade islands of the fog-lashed peaks and burning sunsets aswirl in infernos of mauve to warm his soul. A treachery of ice-fog may drift in upon him to bewilder and confound his going betimes, for Nature here is at her mightiest—and at her heights of whimsicality.

An excited pulsebeat awaits the hiker who catches his first glimpse of Spring's mantle of flame azalea shimmering through old Smoky's blue mystery, while the drowsy tinkle of sheepbells may lull him to sleep beside his sputtering campfire miles apart from the disturbing turmoil of bustling cities. The jagged promontories of the Sawtooth Mountains toward the east are sure to play havoc with his trousers while he inches along on knife-like edges of rock above plunges two thousand feet deep. On the western slopes of this gigantic succession of peaks he has more adequate advantages



JAMES E. THOMPSON

OLD AS THE GRAND CANYON

Even the rocks in the streams are worn smooth as silk by the endless grinding of erosion

JAMES E. THOMPSON

WHERE PEACEFUL MOUNTAIN FARMS DOT THE VALLEYS FRAMED BY FORESTED HILLS

And their owners, cut off from the world for centuries, ask only to be left alone in their quiet coves to work out their destinies

ASHEVILLE PHOTO CO.

WHEN THE MOUNTAINS FLAME

Azalea turns the gray of winter into a burning skyline in March and April. Then the peaks are gay!

from Bone Valley in Carolina upward to Buckeye Gap at the crest, where he may turn either eastward to Siler's Bald and Clingman Dome, or west to Cold Spring, Hall's and Spence Cabins down by Thunderhead, which overlooks the "Valley of the Noonday Sun", or Tellico, the oldest Indian settlement of colonial days.

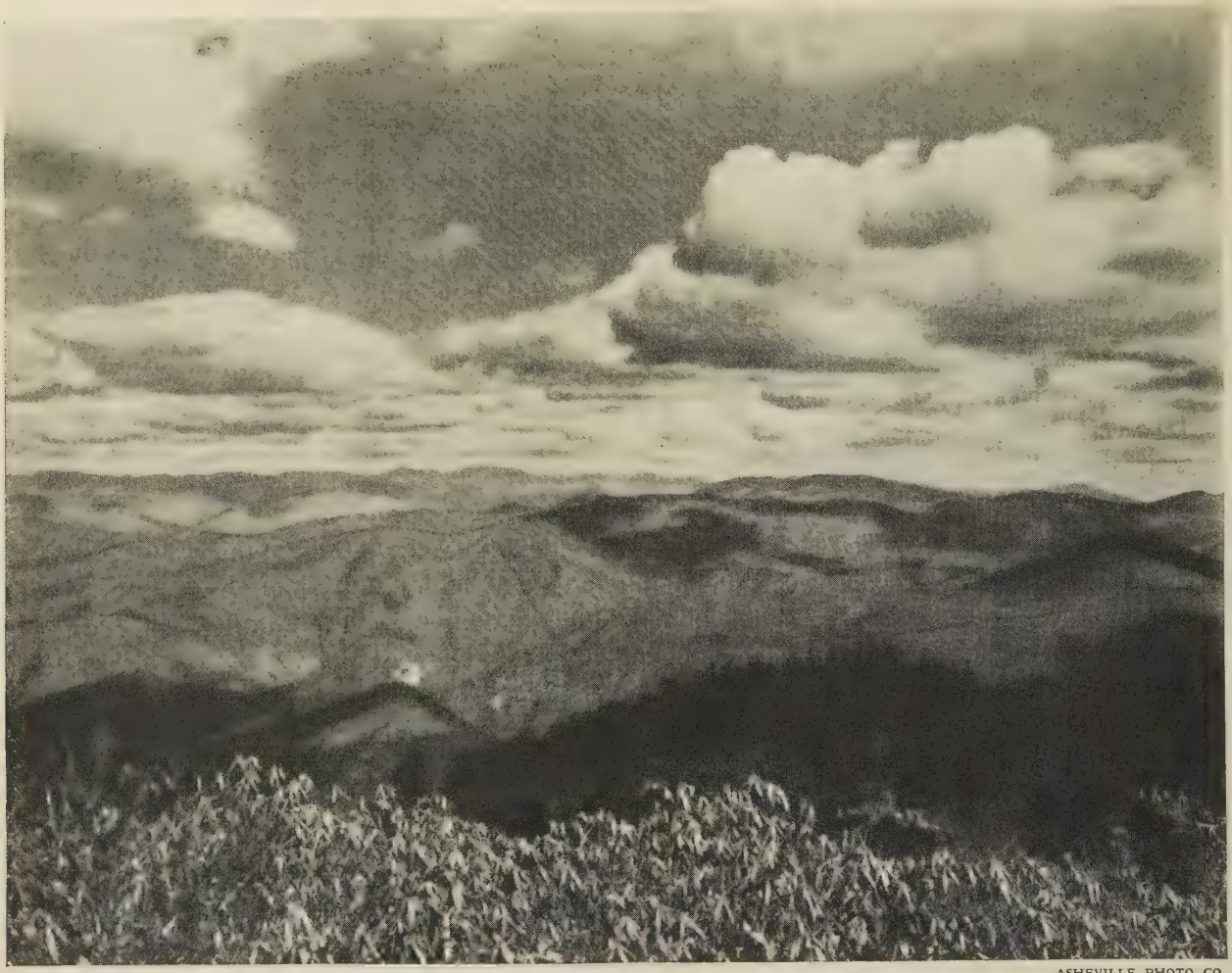
From Gregory's twin Balds here he may also glimpse the great Cheowah Dam mirroring the sky in the endless, wave-like hills rolling toward the Atlantic shores of the Carolinas. Below Smokemont, on the very breast of Old Smoky, he will soon be able to make a flying motor trip on a brand new highway through Newfound Gap at an elevation of 5,090 feet to Tennessee and Mt. LeConte. This road is the first to cross the Smokies since Thomas's old military road at Indian Gap during Civil War days.

The visitor's first impression of Great Smoky is her age-old aspect. Ten times older than the Grand Canyon, the contours of her element-resisting tops bespeak the Beginning of Things. That mighty, silent Sculptor, Erosion, has chiselled the adamantine skyline into more fantastic shapes with the steady chipping of Time, but her aeons of carving have hardly lowered the peaks. Even

JAMES E. THOMPSON

THE MOUNTAINS OF THE MILLION SMOKES WHEN THE ICE-KING REIGNS

As beautiful at thirty below as during the springtime are these peaks, conquerable by those who dare to try them



ASHEVILLE PHOTO CO.

WHERE THE CREST-LINE OF THE SMOKIES CLEAVES THE SOUTHERN SKY

The beautiful view from Black Rock, revealing the rugged charm of the East's greatest mountains

exposed peaks are clothed in verdure topping a feldspathic humus three to four feet deep which supports a phenomenal tree and plant growth. In the Monadnockean gaps the peat is deeper and this dark, tanbark-like mire constantly influences biological mutations.

Old Smoky's great base, cross-currented and braced with countless ridges, is of fused rock, a conglomerate of limestone, quartz, mica, slate and granite. Carboniferous slate at Indian Gap is known to be more than a mile and a half deep. Outcroppings of giant boulders, many of them with great trees growing atop, clutter up a thousand ravines and spurs where crystal trout streams churn their mossy sides with veils of spray as they thunder down into flowered glens. Although North Carolina was at one time ranked second in the mining of the precious metal, the gold which De Soto sought eventually proved to be negligible. Ages ago this gold, together with hot flint, was squirted like hot butter under tremendous pressure into thin paperlike seams of granite or conglomerate. The flint was cracked into great blocks by the chill seawater when the old mountain mass first lifted her shaggy head above the waves to shake out the salt with much hissing of steam and fire. The late Cretaceous Period, one hundred and fifty million years ago, probably observed old Smoky's début as a mountain range.

During the modern years of 1820-30 there were "shaking balds" in Haywood, Rutherford, and Macon Counties that rent boulders apart and split trees asunder with a terrific belching of hot water and steam. Since those events startled the natives there have been no quakes and the old mountains have settled down to the more peaceful pursuits of coining natural wonders.

The history of this exceptional range is so closely tied with the colonial affairs of both Carolinas that there is scarcely a peak, gap, or stream that has not recorded its bloody toll of the tomahawk or flintlock. The region might well be termed a cross-section of early American history. Ancient intrigues between England, France, and Spain, with the poor deluded redskin flying from one to the other in the vain hope of rescuing his beloved hunting ground, made it doubly hard on the backwoodsman who sought with his axe and rifle to build an empire free of war-fed palatinates and their domineering tenets. That he had succeeded with the aid of his homemade, straight-shooting Bean and Decherd rifles, when England finally bowed her head to the inevitable at King's Mountain and Yorktown, seemed a miracle indeed. The severe grilling he received, however, at Rabun Gap, Rutherfordton, Sycamore Shoals and Fort Loudon seasoned his random tactics with the Napoleonic foe (Continued on page 348)

HERITAGE OF TREES

CAROLINA FORESTS— PAST AND FUTURE

BY J. S. HOLMES

STATE FORESTER OF NORTH CAROLINA

THE LONG-LEAF PINE
It once covered all the coastal plain from New Bern to the Savannah River

IF A FOREST map had been made of the Carolinas when the first white settlement landed on the shores of Albemarle Sound, it would have shown a continuous forest from the seaside to far beyond the mountains where the Virginia, Tennessee and Georgia state lines are now drawn.

Beginning with the long-leaf pine of the flats and sand hills along the coastal plain, unbroken forests extended through the clay uplands of the Piedmont, changing here to close-ranked oak and other hardwood species mixed with short-leaf or yellow pine. These primeval timberlands spread through the lower mountains, where the percentages of the more valuable hardwoods increased and where the northern white pine and hemlock formed a profitable mixture, and extended into the highest hills, whose dark summits were covered with spruce and balsam. There were practically no areas destitute of timber except the salt marshes bordering the sounds.

After three hundred years of settlement the forest picture is considerably changed, but even yet there is little more than one-third of the total area of these two states under cultivation. The timberlands have been cut more and more closely until much of the area has little or no tree-growth upon it. Most of it, however, still bears enough timber to warrant the assertion that it will sooner or later, perhaps considerably later, return to a thrifty forest if fires can be kept out.

While nearly all of the coastal plain region from New Bern south to the Savannah River was once covered with long-leaf pine, at the present time the second growth of

A.-B. PHOTO SERVICE

A REMNANT OF THE SPRUCE AND BALSAM FOREST
Once it covered the Black Mountains of North Carolina in a rich cloak, but now, scattered and cut to pieces, it is content to take refuge in Mt. Mitchell State Park

ASHEVILLE CHAMBER OF COMMERCE

IN THE PISGAH NATIONAL FOREST

Recreation, constructive forestry and protection of watersheds are elements in this preserve near Asheville

this species is restricted to a comparatively small area chiefly in the southeastern corner. The turpentine industry which began nearly two hundred years ago and which reached its peak of production about the time of the Civil War was the primary cause of this destruction. The boxing, followed by frequent fires, caused the trees, for which a profitable lumber market had not been established, to burn down, while droves of hogs fattened on the pine seeds and seedlings, preventing reproduction. Since the razor back hog has been eliminated through the enactment of the stock law there is still a fair possibility of the tree recapturing some of its lost acres; but most of this section has returned to forest growth, if at all, from the seed scattered by the tall loblolly pines which thrive along all the smaller streams.

Scattered through the coastland, but of greater importance around Albemarle Sound and extending up through the Dismal Swamp into Virginia, were once forests of white cedar, known locally as "juniper." George Washington in his woodsman days carried on lumbering operations in these "juniper" tracts. Alas! fire following lumbering has largely prevented their regeneration, while the remnants of the timber are now being converted into ice-cream churns and butter tubs. About the only uncut forests are those occupying extensive swamps and containing black gum, tupelo gum and sweet gum timber. There has been little demand for this material so far except for veneer packages and to some extent for factory flooring. With the development of methods of using gum in the manufacture of paper, the Carolinas will be able to furnish material for several pulp plants.

The better quality lands of the Piedmont Region have gradually been cleared and used for the production of cotton and tobacco. The deep red gashes in the hillsides show too plainly where forests have been removed and agriculture practiced at the expense of the land. Many of these fields, especially in the belt where the Piedmont merges into the mountains, might have been handled more profitably in timber. The present woodland of this region forming parts of the farms is comparatively free from fire because surrounded by cultivated land. But whether still in the original hardwoods and pine or whether grown up to second growth pine forests following abandonment, it has generally been cut with the idea of immediate profit rather than of permanent benefit to the forest. It was chiefly on account of the large proportion of oak timber in this region that the southern furniture industry was established fifty years ago at High Point. This business has now extended to many of the Piedmont towns, but strange to say it has found no foothold in the mountains or the Coastal Plain although much of the timber now being used by these factories comes from our mountain forests. The furniture industry in the Carolinas is now worth in excess of $50,000,000 per year, and though it continues to flourish the proportion of its wood derived from the Carolina forests is gradually decreasing.

After the removal of the better quality of old growth timber from the Piedmont forests, the chief source of revenue from the farm woodlands has been the making of cross-ties. The development of the pulp industry, however, now promises to supplant this business as first in importance.

The Southern Appalachian hardwood forests are the most varied of any hardwood regions in the temperate zone. Yellow poplar, ash, linden, hickory, buckeye, cucumber, cherry, walnut, sugar and red maple, nine species of oak, a large percentage of chestnut, and many other types of less importance are mixed in varied quantities throughout this region. Scattered sometimes in almost pure stands and again in individual occurrences are hemlocks, white pine and four species of yellow pines. At a large mill operated some years ago in the Great Smoky Mountains twenty-four different varieties of trees were

being cut into lumber. These mountain forests have been cut more or less heavily depending on whether they were logged by rail to a big mill or whether culled by the selection of two or three of the leading and most valuable species. There are still a few areas of virgin timber containing most or all of the kinds mentioned, but the larger lumber output of fifteen to twenty years ago when nearly three billion feet were cut annually in the two states will never be restored. If properly protected and intelligently managed, these forests, which are not only valuable timber-producers, but also protectors of the head waters of interstate and navigable streams, will be restored to their former usefulness, although not to their early magnificence.

Capping these Appalachian Mountains in North Carolina is the southern extension of the northern spruce forests lying on such isolated peaks as Grandfather and Roan Mountains and in much more extended areas on the Black, Balsam and Great Smoky Mountains. These lands have been so cut and devastated since the beginning of the present century as to leave only small areas in the Pisgah National Forests and the Mount Mitchell State Park and a larger area in the proposed Great Smoky Mountains National Park. It is said that the red spruce, which with the southern balsam forms the entire forest, reaches its maximum development on these high mountain slopes above an elevation of 4500 feet. The value of spruce as a long-fibered wood almost necessary in the production of news print, and the abnormal demand for this wood as an aeroplane material during the World War, finally wrote "finis" on this thick carpet which once covered the hills.

E. T. H. SHAFFER

VIRGIN FOREST IN SUMMERVILLE

The pine has always been sacred to this town, and the rewards of protection have been both practical and aesthetic

The development of forestry in the Carolinas dates back to the early nineties when George Vanderbilt began the acquisition of an estate which finally exceeded 85,000 acres lying in three counties of western North Carolina. Here Gifford Pinchot began his career as consulting forester to the Vanderbilt Estate and here was established a few years later the first forestry school in the United States, an institution which ceased its usefulness only when its Director, Dr. C. A. Schenck, left for his native land before the opening of the World War. The greater part of the Vanderbilt ownings was purchased by the federal government as one of the first large acquisitions under the Weeks Law and now forms a most interesting section of the Pisgah National Forest. This unit, the Nantahala Forest, extending into South Carolina and Georgia, and the Cherokee Forest, only 7000 acres of which are at present within these states, together comprise some four hundred and fifty thousand acres federally owned in the Carolinas. While the Weeks Law stipulated that these forests were secured for the protection of streams, the Clarke-McNary Law under which they are being enlarged emphasizes also the production of timber. Providing recreational facilities is also an important part of the national forest policy. At present these three great uses of our forest lands are being stressed, and the national forest administration thus demonstrates to public and private land owners improved methods of forest management.

Unfortunately the states have not kept pace with the federal government in the application of forestry principles to this valuable heritage. No definite policy governing the acquisition or administration of publicly owned forest lands has been adopted; however, the need for state parks and state forests is being agitated and a few parks have already been established. Mount Mitchell State Park which contains the highest peak east of the Rocky Mountains was purchased in 1916 by the state of North Carolina at the insistence of Governor Craig, who saw the necessity of preserving a specimen of the spruce and balsam forest before the commercial activities had destroyed them all. Fort Macon State Park on the coast of North Carolina containing the well-preserved ruin of old Fort Macon was donated (Continued on page 344)

DENIZENS OF COAST AND STREAM

CAROLINA FISH THAT LURE THE NATURALIST AND THE FISHERMAN

BY C. S. AND H. H. BRIMLEY

THE CAPTURE OF A WORTHY FOE ASHEVILLE CHAMBER OF COMMERCE

Most Carolina streams are well stocked with trout or bass, and are a paradise for anglers

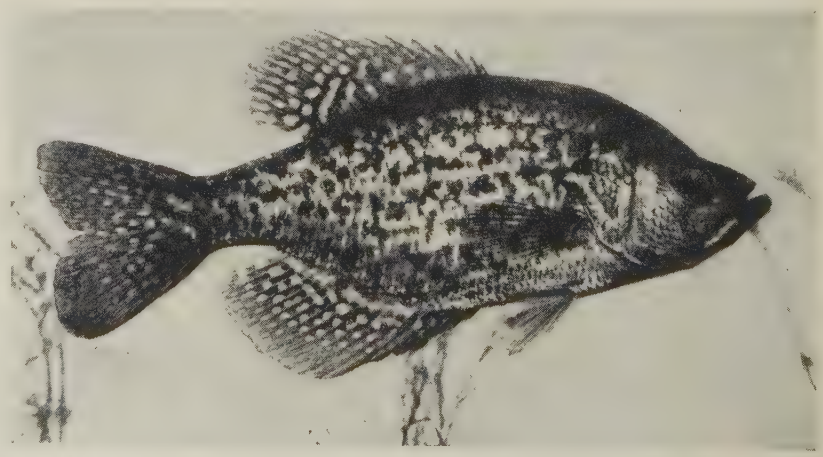
A PARADISE for fish was created when the "Low Country" of the Carolinas was built up out of the Atlantic by the deposits of the rivers flowing southeastward from the highest mountains of the eastern United States. The soil, eroded from the hills, filled up the shallow sea to form the coastal plain of the two states, and the currents of the rivers, meeting the tides and waves at their mouths, formed great sand bars and mud banks. Southward, these became numerous small islands surrounded by extensive waters; to the north they formed long, narrow banks enclosing the largest system of sounds in the country. So extensive are these inland waterways today that their shoreline covers 2400 miles, while, measured without them, it is but one-fifth this distance. And here is an unparalleled feeding ground for the vast hordes of shore-loving fishes that frequent the Carolinas.

THE FAMOUS BROOK TROUT NEW YORK AQUARIUM

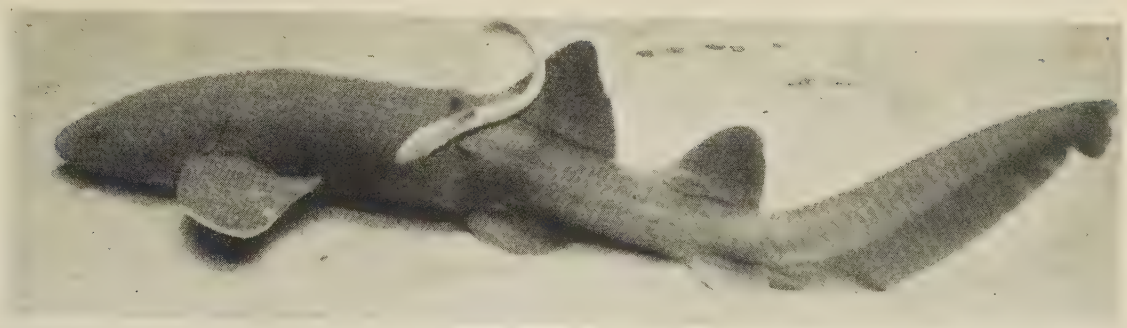
He far outshines his friend, the crappie pictured below, as a game fish and as a tasty dish

Outside the serried ranks of islands and sounds, the silt-laden waters built up great banks and shoals, and here gather those scaled denizens that prefer deeper water, and thrive mightily on the living Nature has provided for them. Thus are the Carolinas excellent examples of the extent to which the physiographic history of a region determines the factors that bear on the abundance of its animal life.

Still another factor helped to create quantity and diversity of Carolina fish life. The warm Gulf Stream that pours out of the Florida Straits keeps near the Atlantic Coast until it reaches Diamond Shoals off Cape Hatteras, the most easterly point of North Carolina; then it heads northeasterly to warm the western coasts of Europe. Cape Hatteras consequently becomes a dividing line between cold water fishes like the common mackerel,



NEW YORK AQUARIUM



A HOMELY OCEAN GOER WITH HIS TRAVELING COMPANION NEW YORK AQUARIUM

The nurse shark of the coastal waters is a vicious fellow, but harmless to man. The shark sucker, on his back, waits for him to rise

sea herring, cod, haddock, and others of like preferences, and such warm water denizens as the snappers, groupers, spotted weakfish, cero, Spanish mackerel, great barracuda, and their kind.

Most northerly of all the inner waters is Albemarle Sound, which, with its northern extension, Currituck Sound, unlike its southern inlets, supports fresh water fish, as a result of the closing of the inlets from the ocean more than a century ago. Here live the three leading representatives of the perch family—white, yellow and pike-perch—the gamy large-mouthed black bass, and other varieties. But the sound is best known to fishermen for the types that live the greater part of their existence in the sea and come to fresh water only to spawn—the striped bass or rock-fish, and those tasty creatures, the shad and the alewife, that each add half a million dollars to the income of North Carolina through the fisheries they support.

Pamlico Sound is connected with Albemarle Sound by Roanoke and Croatan Sounds, and is separated from it by Roanoke Island. Being salt, it supports an abundant population of marine fishes, among them the bluefish, menhaden, croaker, and squeteague or weakfish, commonly dignified in the South with the title of trout, and a deserved favorite on southern tables. Along the borders of the numerous shoals and in the estuaries of the Neuse and other rivers entering the sound live the same anadromous species that frequent Albemarle Sound, the shad, alewife and striped bass.

To the south of these two large sounds, the fishing grounds are less extensive and are mainly off shore, except for a few unusual spots where certain varieties gather in large schools. One of these popular meeting places lies within sight of Cape Lookout not far from Beaufort, North Carolina, where fishes from the far south mingle with those ordinarily belonging to the neighborhood. Here are sharks of all kinds, including the rare nurse shark and the still rarer thresher, rays in great number, the giant manta or devil fish, and the large and small barracuda, the latter reaching its southern limit in these waters. Sailfish are taken at times in pound nets set along the ocean frontage, and once in a long while a giant ocean sunfish becomes grounded on the treacherous shoals.

NEW YORK AQUARIUM

GAMEST OF ALL BREEDS

Black bass is the king of Carolina game fishes, although the yellow perch, below, figures prominently

NEW YORK AQUARIUM

Other waters well favored by many fishes are those off the mouth of Cape Fear, off Georgetown, Beaufort, S. C. and Charleston. The Florida element comes more and more into prominence toward the South, and at Charleston

HOMEWARD BOUND

The "bacon" is a 44 pound channel bass, enough for several meals

even the tropical blanquillo occurs.

Those denizens of the streams, lakes and ponds of the higher interior are considerably different from the species inhabiting the more sluggish waters of the coastal plain. New elements enter, also, for on the western slopes of the Blue Ridge is an infusion of the Mississippi Valley forms; but these elements affect only North Carolina, as all South Carolina rivers flow into the Atlantic. In the coastal plain appears a distinctly lowland fauna, characterized among the fishes by such varieties as the lowland darter, the pygmy perch, and the ditch fish, which is the only living open-stream relative of the blind fishes of the famous Mammoth Cave and other limestone caverns of the central states. There are also present the star-headed minnow, the top minnows, those little viviparous fishes which are the most efficient natural enemies of mosquitoes, the black-banded catfish, known only from North Carolina, and locally called "penitentiary cat" from its markings, the primitive and destructive gar, the grindle (or bowfin), a species of great scientific interest, because of its close relation to primitive types, the black-banded sun-perch, and many other widely distributed forms. The most important fish of this region is probably the large-mouthed black bass, the best game fish of the freshwaters of the two states. Its only rivals, the larger sun-perches or breams, the speckled perch, the larger catfishes, and the suckers, cannot hope to equal it in popularity. Only the coastal plain can boast of natural lakes and lake fish. All those in the piedmont and mountain regions are artificial, but are usually well stocked.

The piedmont region of the two states differs from the Low Country in having a wider variety of suckers and shiners, and a decided lack of most of the more strictly lowland fishes, although some of these range much farther up-country in South Carolina than in her more northern sister state. The large-mouth black bass is the most important game fish here as it is along the coast.

The mountains are distinguished on their eastern slopes in both states by the replacement by the brook trout of the black bass as the chief quest of the angler. The rainbow and brown trouts also have been introduced during the past few years, and are favorites of the fisherman. Together with an increasing number of species of darters, those tiny perch-like fishes that are so fond of swift pebbly streams, the trout are the principal denizens of the fast-running waterways. The brook trout is at the southern extreme of range in the Carolinas and is therefore found only at the higher elevations where the mountain streams are very cold and run small in size, and usually contain comparatively small fish. Thus it is usually quite small in the Southern Appalachians and cannot compare with the giant race taken in the Rangeley Lakes and other northern waters.

FISHERMAN'S LUCK H. H. BRIMLEY

Comparing a six pound striped bass with a four pound black bass

On the western slopes in the Mississippi drainage the same variety of forms exist, and these are supplemented by such species as the paddlefish with its long spatula-shaped snout, the Ohio muskallunge, the rock bass, the little miller's thumb, and others. The three trout, two introduced and the other native, are still the most important game varieties.

Not all of the fishes of salt water, coast, piedmont and mountain are, of course, sought by the eager fisherman. The king of fishes from his viewpoint is the large and gamy channel bass, which is also known locally as the red drum, and farther south as the redfish. Surf-casting for this species is carried on all along the shore line of the two states, mainly near the numerous coastal inlets. Many specimens of above forty pounds weight are caught each season. In 1930 the largest reported was a fifty-eight pounder, taken at Brown's Inlet, North Carolina.

WHERE FISH GET LARGE

This giant sunfish, weighing 1200 pounds, was taken near Swansboro, North Carolina

Bluefish, cero, Spanish mackerel, gray trout (weakfish), sea mullets (the "kingfish" of the northern coast), croakers, flounders, sheepshead, spots, and a host of others are also sought by the angler. Bluefish, cero, and Spanish mackerel are usually taken by trolling, and offer rare thrills. A few tarpon have (Continued on page 339)

Helps and Hints

FOR HOME AND GARDEN

PLANTING THE GARDEN, MONTH BY MONTH

By Romaine B. Ware

A garden without iris at this season is almost inconceivable. They are the mainstay, the backbone of the season's floral pageant. Recent years have seen tremendous strides made in the development of new and better iris and if you have not added some of them to your garden, you are overlooking something. Several of the choice new sorts produce flower stalks four and a half feet tall, but better still the quality of their blooms is a vast improvement over the older kinds. Just now you should visit the gardens of some iris specialists and see for yourself these wonderful new things. In nearly every section of the country growers and dealers are found who specialize upon this flower and in their plantings you can see and appraise the latest productions.

Among the very new iris, most of them still high in price, there are several which will bear watching. Pluie d'Or is a magnificent new yellow, especially good as a garden iris. Pink Satin is the first really true pink iris and is a quality flower in every respect. Frieda Mohr is a new one in the pinkish-lavender deep lilac-rose group and very fine. Sir Michael comes from England and is one of the outstanding new things from that land which has given us so many choice ones in the past. Numa Rumestan is a new true red, a color the hybridizers have been long working for. Blue Velvet is everything and more than the name indicates. There are many more fine things among the new introductions that you will wish to see even if they are still so costly you can not afford to invest. They will come down in a few years and in the meantime you can get familiar with them.

The same thought applies to new things among the spring-flowering bulbs. You may not feel like paying ten to fifty dollars for a single bulb of narcissus or tulip but the fact that there are varieties valued at such prices makes one wish to see them. In many parts of the country there are fanciers who grow a few of these exclusive novelties, and those who are interested will find them. Always we should be interested in the new and different things. Spiraea and mock orange may be very good but why not become familiar with some of the new Japanese crab apples and cherries? The hawthorns, too, in their many forms are worthy of places in our plantings and just now when their season of bloom is at hand is the time to study and become familiar with their desirable qualities.

As the season for planting gladiolus arrives we should plan to plant so that we may have blooms to cut throughout as long a period as possible. The length of time

(Continued on page 333)

Very individual and showy in their different colors and tufted centers are the Japanese Anemone Chrysanthemums.
Above, Mrs. Frank J. Tanber.
Right, Mrs. H. J. Ballagh.
50c per plant, $3 per dozen, $20 per 100.

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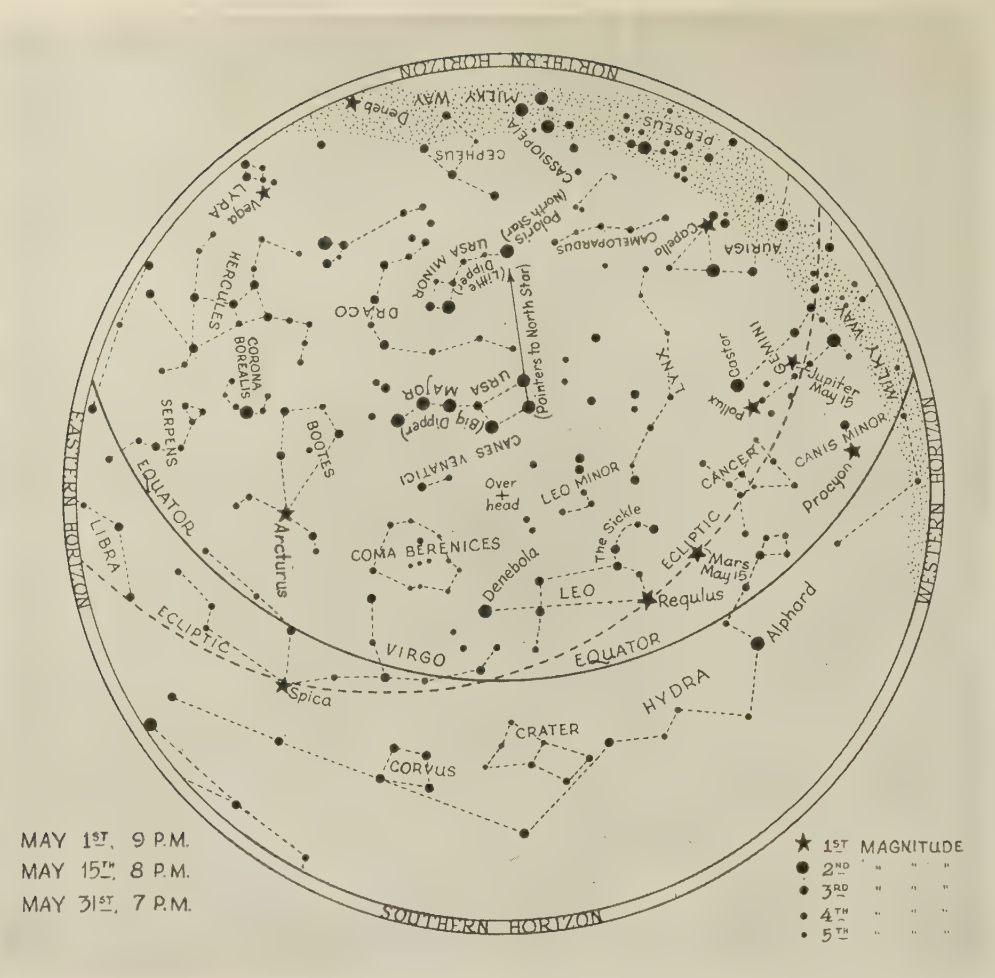

To use this map hold it before you in a vertical position and turn it until the direction of the compass that you wish to face is at the bottom. Then below the center of the map, which is the point overhead, will be seen the constellations visible in that part of the heavens. It will not be necessary to turn the map if the direction faced is south

THE EVENING SKY IN MAY

BY ISABEL M. LEWIS

THE constellations of spring, Leo and Virgo, Hydra, Corvus and Crater are now taking the place of the winter groups. Orion, Taurus, with its Hyades and Pleiades, and Canis Major, with its magnificent Sirius, are disappearing. Gemini still lingers low in the western sky, and the Little Dog-Star, which remains in view long after its more brilliant companion, the Big Dog-Star, Sirius, is gone, still climbs above the horizon. Far in the northwest Capella, in Auriga, is dipping out of sight.

Leo and Virgo, constellations of the Zodiac, now occupy the center of the celestial stage in the south. The huge constellation of Hydra, the Snake, nearly fills all the southern sky below these two. Its head is marked by a group of small stars directly south of Cancer in the southwest, and the tail reaches almost to the southeastern horizon. The two small groups known as Corvus, the Crow, and Crater, the Cup, are called "Riders" of Hydra. They rest directly upon Hydra and are now due south below the Y in Virgo and Denebola in Leo in conspicuous array.

In the north we find that the Big Dipper is now high above the pole and on the meridian. It is seen at its best in the evening at this time of year. It is now inverted with the bowl toward the horizon. See if you can find the little star Alcor that forms, with Mizar, the star at the bend in the handle, the pair known as the Horse and Rider. This object is an excellent one upon which to try your opera glasses.

There are three other star clusters in view in the evening sky this month that are worth viewing with opera glasses or, better, with field glasses magnifying about nine times. The first is the star cluster known as Praesepe, or the Beehive, that lies in Cancer in the part known as the Manger. The two stars at either side of it are called Aselli, or the Asses. To the naked eye this cluster is but a hazy patch of light but it reveals itself as a collection of many fairly bright stars when (Continued on page 341)

HELPS AND HINTS

(Continued from page 331)

om planting the bulb to the opening of blossoms varies a great deal with different varieties. Kunderd's primulinus brid Encore will bloom in fifty-eight ys while his Autumn Colors needs one ndred forty-five days to develop its bloom lk. The average variety ranges from venty to ninety days. This applies to ge size bulbs. Small bulbs will need nger, so if you wish an extended season, ant not only many kinds but both large d small bulbs as well.

The real flower enthusiast will find it ell worth while to buy gladiolus in the naller sizes. They cost about half as much d except where one desires blooms for hibition purposes, they will do just as ell. Never under any circumstances buy e large, thin, flat bulbs that are offered cheap by some dealers. They are generally old, worn out stock and practically orthless. Quality bulbs are plump and gh, not necessarily large. Any bulb even small as half inch in diameter will bloom d make a good bulb for next season. ith very choice scarce kinds, one can buy iblets and get bloom the second year.

As the season advances the bargain hunting gardener is frequently tempted by sales rose bushes, dormant and almost completely dried out. These are hardly to be nsidered bargains but if you will buy em, here is a way to give them the best ssible chance. As soon as you get the sh home, dig a shallow trench and bury e entire plant, root and branch, working e moist soil in all around it. Leave it ried for ten days, then dig it up and you ll find the shriveled stems and buds will plump and sound. The bushes should en be planted and pruned to within three four inches of the ground. This severe uning is absolutely vital with bushes anted as late as this.

Few amateur gardeners use their pruning shears as early and as often as they ould. At this season the early flowering rubs, such as forsythia, should receive eir annual cutting back. Just as soon as e blossoms fade is the time to do this d the oldest wood should be cut out tirely. This will encourage new growth ring the coming months and a better disay of blooms next year. Do not prune y shrub till its flowering season is past by doing so you destroy branches that ll bloom this year.

Everybody likes pansies and we all like grow the extra large blooms, the "giants" itten about in the catalogs. With pansies, en more than with the average flowers, ality seeds are absolutely essential. In rent years, extra fine strains have been deoped and if you wish the best results you ust get the best seed. Of course the pansy dlings must be cared for right. They must planted and brought along without the st checking because plants that are re-ded in their growth seldom fully re-ver. After being transplanted into their manent location and becoming established they may be stimulated with a few sals of nitrate of soda. Be careful not to e o it and not to contact the plants or roots with the crystals.

Doubtless you plan to plant some addi-

(Continued on page 334)

BOBBINK & ATKINS

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New beauty, gorgeous new colors, exquisite fragrance and fascinating new interest are brought to your garden by the addition of a Water Lily Pool. And, fortunately, there is room in every garden, large or small, for a Water Lily Pool, or at least a sunken tub garden. Marvelously beautiful effects may be quickly achieved with little expense or effort.
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1931 Special
Five plants. Blue Lotus of Nile and Pink, white, blue and red Water Lilies. All 5 for
$5.
Wm. Tricker Inc.
1402 Brookside Avenue
Saddle River, New Jersey

(Continued from page 333)

tional bulbs in your garden next fall and this is the time to locate them. Study your planting and see where they may be placed to make the best display. Clumps of a dozen to twenty-five make the finest show. As you decide where you will place them, drive a stake and allow it to project an inch or two. This will guide you next fall and you will secure the effect you have in mind.

As your bulbs, tulips, narcissus and others end their period of bloom, do not be in a hurry to remove their foliage. Until it has dried up and turned yellow or brown, its work of maturing the bulb is not complete. Even though it may be unsightly you can ill afford to cut it off and sacrifice the bulbs that will bloom another year. This also applies to bulbs that are naturalized in the grass. Don't cut the grass till the bulb foliage matures.

When the buds begin to develop on your peonies it will pay to give them a light application of liquid manure. This will stimulate them to produce larger and more perfect blooms. Don't overdo it or you may cause the plant to produce weak watery growth inclined to fall prey to disease. Peonies need lots of water during the weeks just before their blossoms open, in fact if they are planted in a well drained soil it is almost impossible to over water them at this time. Don't neglect cultivation either as this has much to do with the quality of blooms.

Just as soon as the soil warms up and dries out sufficiently to be worked, you may plant seeds of the annuals in the open ground. It is unwise to hurry with this task because as long as the ground is cold and wet, seeds will not germinate. If you have a hot bed or cold frame where you can control the moisture, then you do not need to wait upon the weather. Poppies, nasturtiums, lavatera, lupines, mignonette and candytuft are generally best sown where they are to bloom. Many others will do nicely sown in their blooming places while some kinds do better if transplanted. Transplanting encourages a branching root system and together with pinching back the tops results in sturdy vigorous plants that bloom profusely.

Among the annuals one gardener particularly praised a scheme of edging he has used and it sounds good enough to pass on. He mixes two kinds of sweet alyssum seed, four parts of that known as "Carpet of Snow" and one part of "Lilac Queen". The result is a delightful, irregular edging that charms all who see it. The usefulness of such an edging can be greatly advanced by shearing the plants when they show signs of ending their blooming. This will cause them to burst forth again and bloom better than ever.

Another combination of annuals is the blue cornflower, *Centaurea cyanus,* and calliopsis; especially effective are these two planted among iris that have done flowering. Like the sweet alyssum they will respond to shearing when their first crop of bloom is over. Experiment will develop many delightful combinations or groupings of plants and you will enjoy your garden all the more as you study and improve it.

Protect your plants, flowers, shrubs, and

evergreens against the first inroads of destructive insect pests. Use Wilson's O.K. Plant Spray frequently and thoroughly now, to insure strong and vigorous growth throughout the season. Order a supply today!

Wilson's O.K. Plant Spray is sold by leading stores everywhere and the genuine may be identified by the famous Trade Mark. Write us, if your dealer cannot supply your requirements.

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Wilson's Awinc (Pyrethrum Spray) Non-poisonous, highly concentrated PYRETHRUM spray. Easily controls more resistant type of insect such as Japanese Beetle, Red Spider, Rose Chafer, Cabbage Worm, White Fly, etc. *Complete,* requiring only a dilution with water.

Then there is Wilson's SCALE-O . . . the powerful ***dormant*** spray so necessary to the successful growth of fruit and other trees. Scale-O kills Scale insects and eggs—even in Winter. Mixes readily in cold water . . . covers very rapidly and evenly. 1 Gallon $2.00; 5 Gallons $9.00.

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Exquisite flowers—finer vegetables are easy

You have missed a garden thrill if you haven't used Fulton's PLANTABBS. Send 10c for liberal trial size. Fulton's PLANTABBS are odorless, highly concentrated, available, balanced plant food in tablet form. One tablet, equal trowel full stable manure without the mess or smell, to pot, window box, around Roses and all garden planting makes stronger plants and brings profusion of blooms. One or two tablets to hill insure finer vegetables weeks earlier. No fertilizer as economical. Four to gallon makes rich liquid fertilizer. Used by Florists and Greenhouses; certified by State Experimental Bureaus; safe for amateurs. Satisfaction GUARANTEED. Large box $1.00. Garden size (very economical) $3.50. Illustrated GARDEN BOOK tells how to succeed, FREE with order. If your home dealer cannot supply, sent post paid by

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PLANTABBS
Odorless Plant Food Tablets

Trim Your Lawn this easy way

Now the hardest work of cutting the grass—is easiest; with this new, long-handled trimmer.

$2.75 POST PAID

Without stooping, you just walk along and neatly trim the places not reached by the mower—sidewalks, flower beds, walls, etc. Your lawn is always neat, clean. Shears of steel, self-sharpening; long 4 ft. handles of finished hardwood. Shipped postpaid in U. S. $2.75 (outside U. S. $3.00). Order now—money back guarantee.

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Protect your Garden

Those tiny green, red or black insects which feed upon the tender green foliage or the buds of your flowers and plants are aphis (plant lice). You must kill them and similar insects if you expect the best growth.

Used By Gardeners Over 20 Years

A garden size "Black Leaf 40" package costs only 35c and makes about six gallons of effective spray. Have it on hand and be ready for insect attack. Sold by dealers in several sizes.

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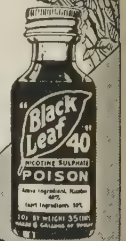

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. . . Will repay you in enjoyment way out of proportion to the effort and money expended. Start one this year. Use our catalog as a guide. 40 valuable pages of water lily lore, drawings, plans, directions. • • This catalog, profusely illustrated in color, will fascinate you for hours. It may be the reason for your discovering the greatest hobby of your life. You can start with a simple water garden, and enlarge it from year to year. Your free copy is ready to be mailed.

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You can get started quickly in raising water lilies with this postpaid collection of hardy, beautiful water lilies. They will thrive anywhere in the U. S. or Canada. 1 Paul Hariot, beautiful orange-pink—1 Marliac Yellow—1 Marliac White. (Catalog value $4) for $3 postpaid. Order now.

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100 Large Healthy Vermont Bulbs **$3**

This collection includes at least 40 fine varieties, in many shades of Red, Yellow, Pink, Blue, Orange, Smoke, White, all fine ones but not labeled as to name. **50 for $1.75.** *All sent prepaid* with complete instructions for growing prize-winners. I believe this to be the finest "glad" collection offered anywhere.

Send for beautiful color catalog "that is different," listing over 300 of the world's best varieties.

CHAMPLAIN VIEW GARDENS
ELMER E. GOVE
Box E-3 Burlington, Vermont

CAROLINA GARDEN-LAND

(Continued from page 308)

dica, a rose garden, and tall graceful mboos which reflect themselves in the ift black river. The garden is enclosed native forest trees; maple, gum, and white k replace the live oak and palmetto of the ast. Yet one feels the presence of the . for the trees of this garden are draped th Spanish moss—the mournful gray ban-s of the coast.

The Cooper, the Santee and a dozen other al streams, once lined with rice planta-ns, now have entrancing river gardens ilar to those of the Ashley. The Garden Belle Isle near Georgetown, where masses white and magenta azalea are sheltered drooping live-oak branches, looks out r glistening blue Winyah Bay through woodland vistas. Here much bamboo is ployed for background while Spanish k oak gives an exotic note.

Wilmington's civic development has been ored by adjacent garden beauty. Nearby Airlie garden on Wrightsville Sound, H Orton garden on the Cape Fear River both old and lovely plantation gardens at have been in course of development for re than two hundred years. In recent years city has laid out Greenfield garden, em-acing about one hundred and seventy-five es of water surface, islands, woodland ect and formal planting. Here azaleas, mellias, crepe-myrtle, and roses, in a me of gray moss and cypress trees rising m the lakes, form one of the most suc-ssful city gardens in the entire South.

On Cooper River, at the ancient Dean all plantation, the present owner has ought a garden unique in all Carolina, water garden where a forest of mighty press trees stands thick in shallow black ols, once the "backwaters" or reserves r rice culture. Japanese-like bridges built cypress timber that had rested for cen-ries beneath the water carry paths across enings in the narrow banks that lead e through a dark and mystic world—ack water beneath, gray moss above, and every hand a labyrinth of straight gray lumns. The dark surface mirrors the ees and the moss and, in early spring, the mes of many-colored azaleas that line e shores and cover the islands. Late in e summer one meets here acres of pale tus blossoms where once were rice fields gardens now such as Cleopatra may ve known beside the Nile.

About 1800 the Low Country planters, ving gained wealth and leisure beyond e dreams of the pioneers, sought, in sum-er, cooler climes. Journeying inland in eat lumbering coaches with slave out-lders they passed the red hills of the edmont, entered the passes of the blue ountain wall that bounds it on the west d finally pitched their summer camps on e high table-land of western North arolina in the Land of the Sky. Here they und Nature in far different mood from e languid sweetness she professed in a mi tropical Low Country—here was a nd of spruce, balsam, white oak, chest-it and the arrowy white pine, a world ade beautiful with the white and pink almia and rhododendron, the glow of eather and the brightness of small Alpine owers. Here were the rolling hills and ily open forests they had known in

Use a Fertilizer you KNOW is safe!

FOR generations cow manure, in spite of its odor, has been prized as the "best" of all fertilizers. It produced *results* far better than anything else one could use. And somehow or other no modern fertilizer can quite take its place.

But, now we have made this faithful old garden producer available with *every* objectionable feature removed. In DRICONURE we bring you cow manure in concentrated form, 5 times stronger than green manure, dry, odorless, granulated—absolutely free of weed seeds, hay, straw or other trash. It comes from dairies where peat moss has been used as bedding, so that in addition to its fertilizing value it also improves the physical condition of the soil. It builds up as it feeds—and regardless of how much or how little you use, or how often you use it, there will be no harmful after effects. DRICONURE is a *safe* fertilizer. It will not burn.

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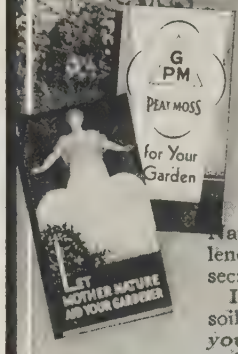

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YOUR *soil* holds the entire secret of garden beauty and success. And while we like to think of Mother Nature as a most gracious and liberal sort of Goddess who lends immeasurable aid in gardening, we must first learn the secret of how to *use* Her treasures.

In gardening, *everything* depends upon the *power* of your soil to produce, and this power in turn depends upon how well *you* provide the soil with water, air, and plant food; and how well you maintain correct soil texture so that the food and water can be utilized.

Soil texture (its physical condition) is thus the key to Nature's help. And G P M Peat Moss is the *only safe and sure way to secure correct soil texture inexpensively*. G P M Peat Moss provides humus—more humus over a longer period of time than any other so-called humus material.

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Two years ago, when times were booming, growers put in huge blocks of the most desirable newer roses. Now they find themselves with a big stock which has to be moved.

While they last, this PEERLESS ROSE GROUP:

9 Finest Fragrant Monthly Roses, strong 2-yr. bushes, value 75c to $1.00 ea., for $2.95

Gorgeous fragrant blooms, all summer long for years to come. 4 pinks, 3 reds, 2 yellows from these finest varieties:

PINKS Columbia, Mock, Killarney, Briarcliff, Commonwealth, Premier, Radiance and Premier Supreme.

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YELLOWS Butterfly, Lady Margaret Stewart, Wellington, Hillingdon, Mrs. Ward or Claudius Pernet.

We will meet your requests for specific varieties wherever limited supply permits, but we GUARANTEE that every shipment—sent as soon as planting season opens—will include full color range, labeled true to name and, if you order promptly, the Prize-Winning Rose—

TALISMAN GUARANTEED TO BLOOM THIS YEAR **FREE**

—rarest of roses in color and form. Golden apricot, opening to copper-red and old-rose blending. Large, fragrant, blooms profusely every month. Regular price, $1.50. We give it free if you order now (making 10 brilliant roses for only $2.95).

3 Roses, our choice from above list (no FREE bush included) 99c

1 Hardy Glowing Pink Azalea (Pinxtor-bloom)
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Pink, red, yellow, pure white. No other flowers so beautiful, so fragrant; have them all day long from early June to late autumn. No plant so easy to grow; no form of gardening so fascinating.

Beautiful Illustrated Catalog of Waterlilies and Goldfish FREE

20 lilies in color; tells what sorts are best and how to grow them in tubs or pool. Pictures rare fish in color — Comets, Nymphs, Calicos, and others. **Get this catalog today** and see how easy it is to have a home water-garden.

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Regular Price, $1.50 each

President Hoover, gorgeous new multi-color rose, winner of four Gold Medals. A real masterpiece, new color blendings. *Talisman*, tremendously popular new rose, awarded many Gold Medals. Strong, 2-yr. field-grown plants.

4 Splendid Roses, $1.95

BRIARCLIFF, rose-pink; DOUBLE WHITE KILLARNEY, fine white; SOUV. de CLAUDIUS PERNET, yellow; TEMPLAR, deep red. These four Roses sell regularly for $1 each. Our price including your choice of President Hoover or Talisman FREE, $1.95.

The four Roses named above and the following four, eight in all, together with both Pres. Hoover and Talisman FREE, for $3.75.

AMERICAN BEAUTY, crimson-carmine; RAPTURE, apricot and gold; MRS. F. R. PIERSON, crimson; MRS. CALVIN COOLIDGE, golden yellow. All strong 2 or 3-yr.old plants, postpaid insured delivery at your planting time. Order today. Honorable Treatment Guaranteed.

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FUNGTROGEN cleans roses and other plants of all fungus, almost in a night, by invisible film. No injury to plant or foliage, no discoloration. Stimulates growth; richer foliage and blooms. Fungtrogen is easily soluble in water, will not clog nozzle of spray. Pint makes 8-gal. spray liquid. $1.50 postpaid. Recommended by leading rosarians.

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These richly colored, fragrant, easy-to-grow garden flowers may be planted from April until the last of August. Ours are the largest Aquatic Gardens in America. Every root *guaranteed!* 75 beautiful Varieties from which to make your choice in our free, illustrated Catalog. Send for it NOW.

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England, and when stone manor hous succeeded the first rude camps landsca gardeners were brought from over the s to create the formal gardens and parks th now adorn the region from Hendersonvi to Asheville. Because here altitude mak up for a southern latitude the flora is mo akin to New England than to the Sou The highland gardens take their note fr the native growth—avenues of straig white pines replace the wistful lines brooding live-oaks, firs supplant magno and palmetto, and rhododendron camellia. Yet somehow, despite their nor ern touch, they are still subtly reminisce of the English hands that shaped th far beginnings.

Nestled amid the great formal garde of these western North Carolina esta and cities one finds the tiny and altogeth lovely little flower gardens of the mou tain cabins with velvety dahlias, the gl of dusty miller, stiff straw flowers a coxcomb, pinks, snapdragon and marig clusters in neat, tended beds with border dwarf box or juniper. In these small beau spots one finds many tender annuals th would perish in the hot coastal sun, b which were brought here, before the Rev lution, perhaps in covered wagons do long mountain trails from Pennsylvania a western New York. Like their human co panions they have taken sturdy root, vigorated by keen mountain air and no ished by the warm sun in sheltered cov

Humble garden plots are not restricte of course, to the mountains—near baronial splendor of the stately river g dens there are often the log cabins of plantation "streets", half hidden by gia leaves of the elephant ear, whose roots boiled and eaten by those who plant the Again in cabin gardens are patches benne, the sesame of the East, whose see mixed with sugar-cane syrup make benne candy of Charleston street vendo The ancestors of these two garden plan so prized by the colored population, ca long ago in ships that sailed to Caroli from the opposite African shores.

Pinehurst, Camden and Aiken are in belt of long-leaf yellow pine that cov the sand hills, and seem to appreciate t stately conifer as a distinctive garden setti Rising from the clean white sand it is thing of beauty in all stages—the you plants erect green plumes, and the larg saplings seem Nature's own Christmas tr with bright green fringe and new bu that stand like white tapers at the end every twig, while the ancient trees sh vast gray trunks that are beautiful agai the intense blue sky of the South. Pinehu a resort of recent growth, features young pines most effectively in its garde Camden, a popular modern resort and the same time a city of the Old South, tal quiet dignity from the tall murmuring pi of its many open squares. Here mode plantings are mingled with the vast for gardens of another generation that of extend over an entire city square. A sm native tree that is widely used in the g dens of the sand hill region, notably Camden, is the Carolina laurel, a glo evergreen that seems to flourish under most any conditions and even lends its graciously to the topiary art. Both Belvedere on the Santee and in the lightful old Upton Court garden at Cam

it is intertwined into shady pleached walks. Again it is trimmed into hedges or clipped to fantastic shapes and figures. In the upper Piedmont, where winters are too severe, it is replaced by privet and in the higher regions by box, both of which do better in these cooler sections than along the coast. In Carolina, Nature seems to strike a careful balance as though mindful of the garden's needs. Box is found in its greatest beauty near Hendersonville.

Everywhere, from Port Royal to the mountain valley of Tryon, when the glory of spring's blossoms fades, summer is made beautiful by the crepe-myrtle, *Lagerstroemia,* the lilac of the South. In fact, this southern beauty holds a year round charm, because its smooth brown and white stems and trunks are crowned in autumn with brief crimson flame, while all through long summers they hold aloft great clusters of purple, red, white and many shades of pink.

The capital cities of the Carolinas, Columbia and Raleigh, like most capitals, are pre-eminently places of culture, education, and beautiful homes, and many gardens flourish there. Columbia garden lovers have had as inspiration many lovely old private gardens laid out in the early days of the Republic. These in most instances have now been destroyed or cut into sections; but a few remain intact, notably the garden of Hampton Hall, the most famous and many think the most appealing of all the many Carolina gardens. It now stands deserted, about to fall before the march of business which demands the block in the heart of the town, covered with its quiet paths; but its memory and high tradition will be immortal, preserved by the other gardens far beyond the confines of its state which it has inspired. The tale of the saving of Hampton Hall during Civil War times is one of the most touching and human episodes of unhappy days—but not to be told here. Generations of beauty-loving owners cared for it, paying special attention to the employment of native plants and trees. In general the garden follows the English manner of the eighteenth century with box trimmed into tall formal shapes, box-bordered walks and box-bordered beds of intricate pattern filled with fragrant and flowering shrubs, roses and other hardy flowers, and in summer brightened with rare geraniums from the long green-houses that stood against the walls. Supplementing the countless foreign plants there is the widest variety of native trees and flowers at Hampton Hall in all of Carolina, for Columbia is midway between the coast and the mountains. Here grow the live-oak and magnolia of the coast, and the hemlock and white pine of the mountains in harmony with white and pink dogwood and other ornamental trees from the nearby woods. Masses of oak-leaved hydrangea, a long pleached walk of *Ilex cassine,* rhododendron, kalmia and sweet myrtle join with the others here to form what is in sober truth the garden of the land.

In Raleigh there are few old or famous gardens but the city is very beautiful because like Columbia it has countless homelike, livable gardens. Here there are no high brick walls as in the coastal cities and the many private plantings, the public parks, and the wide streets bordered with trees and flowers create a veritable city of bloom. Many thousand crepe-myrtle trees adorn Raleigh streets, planted through

A Garden Full of Dahlias for $3.50

New and Rare Exhibition Dahlias

Few flowers, whether used for garden decoration or principally for cut blooms to decorate the home, are as responsive to simple garden culture as our Modern Dahlia. It has made wonderful advancement in size of bloom, habit of growth and profuse blooming qualities.

In anticipation of again placing before our customers a collection of Dahlias, we have arranged for a sufficient quantity of exceptionally fine, strong Tubers and are offering

12 Dahlia Tubers for $3.50

—one each of 12 distinct varieties, not labeled, which if purchased separately according to name, would cost not less than $10.00.

Order Your Tubers Now and plant after the middle of May or when all danger of frost is past. *Cultural instructions in package.*

Mail your order with Check, Money Order or Cash, mentioning this advertisement, or call at any of our stores, and the collection of Dahlia Tubers will be sent prepaid to any point in the U. S.

In our 1931 Spring Seed Annual, sent upon request, you will find a list of Dahlias representing the cream of the finest varieties available.

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Bring the glory of the hills to your home

Nothing is more beautiful than the glorious spring blooms of Rhododendrons and Azaleas—modest white, soft orchid pink to orange yellows. Our nursery-grown native Rhododendrons can come to you at very reasonable prices. Catalog on request.

Special offer for $25 includes 12 plants, 1 to 3 feet high, ten different, enough to cover 25 to 40 sq. feet. The blooms are from white to orange, April to July—a wondrous series of blossoms.

La Bars' broad-leafed evergreens call for no maintenance expense. Cold will not kill them. They blend with all forms of architecture. Our nursery-grown stock conserves native forests.

Price for this superior collection only $25, packed, f. o. b. Stroudsburg. Please send check with order.

Each plant marked and guaranteed true to name. We have the largest Rhododendron nursery in America.

Visitors welcome to nursery. Write for full list of shrubs in this offer.

LA BARS' RHODODENDRON NURSERY
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10 EVERGREENS for $1.10
WE SHIP DURING APRIL, MAY, JUNE

Three- to five-year-old trees, 12 to 15 inches high.

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4 Norway Spruce
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6 to 7 years old; two trees.....$1.10
8-9-year-old trees, 3 times transplanted, extra bushy, nicely shaded, $1.10 each.

"The God Tree of the Himalayas."
Silver Tint Foliage Blue — **Cedrus Deodora** — A Beautiful Evergreen Tree
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MUGHO PINE, ball shape growing 10 to 12 inches. 2 FOR **$1.10**

With every order of $5.50 or over you may select, FREE, $1.10 worth of any stock from this adv.

GUARANTEE Any stock not satisfactory will be replaced FREE or money back.

RHODODENDRONS
(Maximum Rosebay), pinkish white flowers. (Catawbianse) flower is reddish purple. (Carolimanum), dark pink. Three plants (1 and 1½ ft. high). Large flowering..... **$1.10**
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HARDY AZALEA (Nudiflora)—A handsome, early free-flowering, deep pink species, very profuse and showy. A beautiful variety. 1 to 2 ft. Blooming age. Each..... **$1.10**
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the efforts of an active Garden Club.

In the textile villages of the Carolinas are found interesting landscaping and planting. The owners of the mills must know that amid beautiful surroundings people are happier and can do better work, for many of these properties are bedecked with ornamental shrubs and flowers. Unsightly warehouses are often screened with attractive shrubbery while again the vast brick mills themselves are softened into cliffs of living green by the use of ivy. Against such backgrounds rose hedges and wide beds of glowing annuals create the same beauty for the new industrial South that was enjoyed by the former plantation South. Frequent garden contests are arranged and the operatives are offered prizes for the most attractive cottage flower beds.

The gardens of the Carolinas, from the regal river estates of the coast to the humble but well-loved plots beside mountain cabins in remote coves of the Blue Ridge, reveal the history of this old land and reflect its many human contrasts. From palm-grown Beaufort shores that are touched by the breath of the Gulf Stream fresh from tropic seas, to the highlands of North Carolina about Asheville where the New England landscape is projected into the heart of Dixie, the many gardens rise tier above tier, taking their inspiration from the adjacent changing woodlands and thus epitomizing within the limits of the two fortunate states all the garden lore and beauty of a continent.

CAROLINA REPTILES

(Continued from page 319)

harmless reptiles being killed by humans.

Of the same species and attaining a length of six feet and more is the common king snake—one of the most, if not the most, valuable ally man has in his agricultural pursuits. Its jet-black skin, ringed with white or light yellow markings, renders it a conspicuous object, and it is to be regretted that such a useful creature should be killed indiscriminately because men are too lazy to acquaint themselves with its harmless ways. Much nonsense has been written about this species. One of the typical legends describes it as relentlessly tracking poisonous snakes to their doom. This, of course, is the sheerest nonsense, for the king snake is no more interested in poisonous snakes than in any others. All is grist that comes to its mill. It will fight the largest of diamond-backed rattlesnakes without hesitation, however. Only one outcome to such a combat is possible—the death of the viper. The king snake is totally immune to snake venom—that is, to the venom of snakes found in this country—and this fact, coupled with its phenomenal constricting powers, foredoom any reptilian opponent it may meet. Nevertheless there is no more interesting pet than a king snake! It is gentle, not at all nervous as are so many other snakes, and may he handled with impunity.

Lack of space prevents discussion of many other of the interesting reptiles found in Carolina but mention must be made of a man who did as much for the reptile family as Audubon did for birds. John Edwards Holbrook was born in Beaufort, South Carolina, of New England parents, in 1796.

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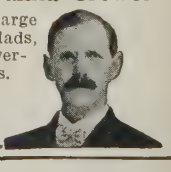

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For decades he studied the reptiles of Carolina and in 1842 he published his famous herpetological books, which, illustrated by the Italian, Sera, undoubtedly form one of the most valuable contributions to natural science ever written. It is interesting to note that it was in Carolina that he found not only many of the reptiles he so adequately describes, but also the inspiration to give every moment of his leisure from his practice of medicine to the study of the most misunderstood of God's creatures.

DENIZENS OF COAST AND STREAM

(Continued from page 330)

been caught by channel bass fishermen, but more have been taken in pound nets.

The large-mouthed black bass is usually called a "trout", but it does not need this name to make it the gamiest of the freshwater fishes of the Carolina region. Individuals in certain waters of the coastal plain of both states grow very large.

Throughout most of the territory occupied by the large-mouth black bass, the chain pickerel, beloved of country boys, locally called "jack", is perhaps the second-best game fish. Some anglers profess to belittle the fighting qualities of this species, but it is a scrapper of merit, though the abundance of fine bones in the flesh prevents it from being a great favorite on the table. In still fishing with light tackle, the blue bream, *Lepomis incisor;* the leathered-eared perch, *Lepomis auritus;* the calico bass, or crappie, *Pomoxis sparoides;* and the yellow perch, *Perca flavescens,* usually called raccoon perch, also have their points which anglers will wildly defend. Towards the mountain region, the small-mouth black bass, sometimes called the "black perch", to a great extent replaces its more southerly relative, and this species is found in many of the mountain streams at quite high elevations.

The Ohio muskallunge is found in some of the mountain streams of North Carolina that belong to the Mississippi drainage system. Like the chain pickerel it is locally known as "jack" and is much sought after by discriminating anglers. Fish up to seventeen or eighteen pounds are taken, but this seems about the maximum size of the present-day muskies of these regions, though legend says that the good old days produced specimens reaching thirty-five pounds. But few people east of the mountains have any knowledge of the muskallunge as a North Carolina species and the fishing for this—the largest freshwater game fish of the two states—is mainly confined to the native anglers of the hills.

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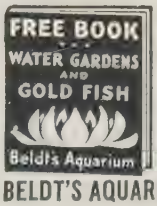

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CAROLINA

(Continued from page 293)

be read today upon the face of the land, for the whole Low Country abounds with landmarks of that vanished epoch.

Rice-planting in lower South Carolina survived the war between the States but languished and finally died as a result of the competition of the Southwest. Many of the great plantations, some of them comprising thousands of acres, are now held as game preserves, so that there are vast areas in the Low Country which abound in game, while the innumerable rivers, creeks, swamps, marshes and lagoons, many of them back-waters or "reserves" of the old rice-planting days, render the region peculiarly adapted to the requirements of an abundant and exceptionally interesting bird-life.

Most of the Carolinian mountain country lies in North Carolina; South Carolina has only a small part of it, in the extreme northwestern corner of the state. It is, in sober truth, a magnificent country, inexpressibly beautiful at all seasons, and in places apparently almost as wild as when Daniel Boone roamed and hunted about the headwaters of the Yadkin and the Watauga.

Appearances, however, are often deceptive. Over most of the mountain region the larger forms of wild life have been destroyed, and in most of the mountain rivers and streams, once teeming with trout, the fish have been killed out or sadly depleted. A good beginning has been made in the work of bringing back the game. In and near certain protected areas deer and black bear are again abundant, the wild turkey and ruffed grouse are steadily regaining their lost ground. Buffalo and elk, formerly common in the mountains, have been brought in from the West and are being given an opportunity to increase. The establishment of the Great Smoky National Park, partly in North Carolina and partly in Tennessee, will not only work wonders for the conservation of wild life in the Carolina mountains but will also preserve unspoiled for future generations the grandest mountain scenery and the largest stands of virgin timber anywhere in the East.

The building of good roads throughout most of the mountain region—and in this respect North Carolina has accomplished miracles—has made her beautiful "Land of the Sky", with its superb views and its invigorating climate, a summer playground for thousands of visitors from all over the Southeast. If she will now carry on vigorously the work of restoring to this delightful region as a whole the wild life that once existed there in almost incredible abundance, she will have in time to come the finest game country east of the Rocky Mountains and will add to it the one thing that it needs to make it irresistibly alluring to the lover of wild Nature.

Carolina is as beautiful as her beautiful name. From the lonely beaches of her sea-islands to the misty peaks of her blue mountains she has innumerable charms with which to fascinate the seeker after beauty. In her lowland forests the yellow jessamine and the great-flowered magnolia bloom. Her upland meadows are starred with millions of daisies. Her mountainsides in spring are ablaze with the wild azalea. On her lagoons graceful egrets and fantastic water turkeys

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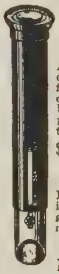

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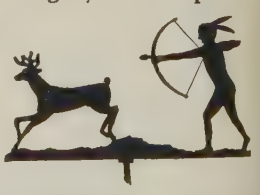

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THE EVENING SKY IN MAY

(Continued from page 332)

viewed with opera glasses or field glasses. Coma Berenices, or Berenice's Hair, is a filmy wisp of light to the naked eye, but the glasses show it to be a coarse cluster of stars. More than a score can be counted with the aid of an opera glass and there are many more in the group, visible in powerful telescopes. This group will be found about midway between the brilliant Arcturus, in Boötes, and Denebola, in the tail of Leo. The third cluster is the great globular mass in Hercules visible as a faint luminous cloud on a clear night when there is no moon. It is a magnificent object when viewed with a powerful telescope. It is composed of more than one hundred thousand stars more brilliant than our own sun but over thirty thousand light years away. It lies on the western edge of the keystone-shaped configuration in Hercules to the northeast of that beautiful little circlet of stars known as Corona Borealis. This is also a good month in which to search, with opera glasses, for the four moons of Jupiter.

Arcturus, Spica and Vega are the three stars of first magnitude now visible in the eastern half of the sky. Vega is now rising in the northeast as Capella is disappearing in the northwest. Procyon and Pollux and Regulus in Leo are the brightest stars now visible in the west. The planet Jupiter, in Gemini, is still a magnificent object in the evening sky, and ruddy Mars shines brilliantly in Cancer, passing into Leo the middle of the month. It will be found a few degrees northwest of Regulus. Saturn now rises about midnight in the southeast in Sagittarius. Venus is still a morning star but very low in the east at sunrise. Mercury cannot be seen until the last week in May when it may be glimpsed near the time of elongation on May 27. It will then be low in the east at sunrise.

American Legion Conservation

In accordance with a resolution passed by the American Legion of North Carolina recommending a program of reforestation, conservation and the restoration of wild life in North Carolina, and requesting each post to interest itself in these subjects for the benefit of the community and the state at large, the legion has been supporting the North Carolina Department of Conservation in its highway beautification work and assisting in the promotion of public parks and public forests. Legion posts and individual members have brought to the public consciousness the need for such improvements and led the state in their achievement.

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NATURE MAGAZINE recognizes that amateur photography has steadily been increasing in interest throughout the country and that some of the finest pictures made today are taken by amateurs.

It is because of this knowledge that a contest is launched to bring forth the best efforts of amateur picture makers and to create still greater enthusiasm for the making of interesting and artistic photographs.

Some of the best pictures submitted in previous contests were made with simple little cameras. It is not so much the camera as it is the subject that is snapped. Today with simplification in cameras and great improvement in film, the novice is often agreeably surprised at the results he so easily obtains.

NATURE MAGAZINE believes in the fostering and furthering of any activity that tends to increase the artistic consciousness of a people. Hence this contest for amateurs.

STORY-TELLING

PICTURES that tell, at a glance, some little story are always more interesting than mere picture records. Usually it is best to have the subjects engaged in some pastime or occupation and snap them when they are not looking at the camera. They will then appear to be unaware of the camera's presence and will not look as if they were there to be photographed.

PHOTOGRAPHIC DEPARTMENT

Edited by
ROBERT T. LOWELL

$500.00 FOR SNAPSHOTS!

First Prize	$100
Second Prize	75
Third Prize	50
Next 15 Prizes	10
Next 25 Prizes	5
Totaling	$500.00

SPECIAL AWARDS

25—One Year Subscriptions to Nature Magazine—winners having privilege of extending their subscription or of designating someone to whom they wish the magazine to be sent.

START TODAY

Pictures of any subject are eligible and the more sent in the greater the chance to win an award.

THE FUN OF PICTURE MAKING

THE WRITER has been snapping pictures for close on to thirty years—that's quite an admission, isn't it?

He still finds keen enjoyment in the camera, however, and is just as anxious to see the results on the last roll as he was when the first picture had been clicked "way back yonder".

It *is* fascinating fun for anyone and it can be entered into with as much or as little serious thought as desired. Many camera owners are not real enthusiasts—they merely want *records* of the children, travels, vacation activities and good times. That is fine—they get what they want. The camera "bug", as he has been dubbed, gets much more out of his photography. He gets more than records; he finds enjoyment in seeking out unusual picture chances and making artistic pictures of the subjects.

Someone has said that an artistic picture is the result of a thing *beautifully photographed* rather than a *beautiful thing* photographed.

THE JUDGES

THOSE who will impartially select the winning pictures in the Nature Magazine $500.00 Amateur Picture Contest are:

B. B. SNOWDEN, Manager of Trade and Technical Advertising, Agfa Ansco Corp.

ALEXANDER LEVENTON, Distinguished pictorial photographer and noted violinist.

ROBERT T. LOWELL, Editor Photographic Department, Nature Magazine.

CHILDREN

PETS

MARINE

TRAVEL

PASTIMES

FLOWERS

FOREIGN

PICTURE SUGGESTIONS

WHILE pictures of *any* subject are eligible, here are some suggestions to start you off: Children, flowers, birds, animals, pets, any nature subject, vacation activities, sports, travel, informal portraits, landscapes, pictures around home or in the garden; buildings—interiors, exteriors—details of architecture, "still life" studies, etc., etc. In short, *any* subject that can be "taken" in the daytime or at night. And remember, that where the subject permits have the picture tell some little story.

A LUCKY "SHOT" MAY WIN. .

YOU may never have made a picture before, yet a picture you submit may appeal to the judges. Remember that it is not necessary to be an expert. Pictures are to be selected principally on their subject *interest*. Expensive or elaborate camera equipment is not required to get winning pictures. This contest is decidedly for the amateur "snapshotter" and a lucky "shot" may win! Get your camera out, borrow one or purchase an inexpensive outfit. You will have fun in making the pictures, pride in starting a collection and a chance to win a worth while money prize. No limit is placed on the number of pictures that may be entered.

THE EASY RULES FOR NATURE MAGAZINE'S $500.00 AMATEUR PICTURE CONTEST (Read Carefully)

1. This contest is strictly for amateurs. Any number of pictures may be entered and at as many different times as desired on or after April 15, 1931. (Pictures shall have been made *on or after that date.*) The Nature Magazine Contest closes July 31, 1931.

2. Pictures may be of *any* subject and of any size up to 8″ in the long dimension. Prints should not be mounted, colored, or have any art work applied.

3. No prints can be returned. All mailings are at sender's risk. No letter is required with pictures. *During the Contest Nature Magazine cannot enter into correspondence about pictures submitted.* Announcement of the winners will be made in the September issue of Nature Magazine.

4. No entry blank is required. Just *print* your name and address plainly on the back of each picture submitted. Hold negatives in case they are required.

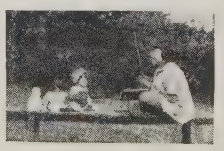
5. While pictures entered in this contest may also be entered in the Kodak International Competition, *separate* prints must be sent direct to that competition and, of course, the rules of that contest regarded. Nature Magazine cannot forward prints.

6. Pictures will be judged 50% on general subject interest, 25% on composition and 25% on photographic excellence. The decision of the judges shall be final. In the event of a tie the specified award will be paid to each contestant.

Mail all entries to Picture Contest Department, Nature Magazine, Washington, D. C.

GARDENS

SEASCAPES


STORY-TELLING

WILD ANIMALS

VACATION

CAROLINA FEATHERS

(Continued from page 316)

lackbirds and grackles; herons and eagles; awks and owls; sparrows and warblers; rens and woodpeckers—all have been en there and are to be seen there, every onth, every year.

There are always certain birds that sitors wish to see when coming into a ew locality. In coastal Carolina, the heron okeries and sea-bird colonies are highghts of avian attractions. Egrets, snowy, reat blue, Louisiana, little blue, green, nd both night herons, are common birds. ogether with the anhingas, or waterrkeys, wood ducks, white and wood ises, they form characteristic dwellers of e cypress swamps. On the sandy bars, off e barrier islands, brown pelicans, royal, aspian, Cabot's and least terns lay their ggs; thousands of black skimmers share ese banks, while willets, oystercatchers nd Wilson's plovers are numbered aong the nesting shore-birds. Armies of nipe, knots, dowitchers, curlews, sandipers of many kinds and occasional godits pass in the migrations, or spend the inter. Grebes, gulls, cormorants and ucks throng the estuaries and sounds uring fall and winter. The Carolina coast s a paradise for waterbirds, both beause of its ocean-washed shores and the ld-time rice fields that border the tidal vers.

Many of the colonial rice plantations are ow privately owned game preserves and e avian life of these flooded fields is ewildering in its abundance. Coots, galnules, herons, bitterns and ducks frequent e sawgrass squares or paddle and fish in e long canals. Woodland birds are many nd varied. Woodpeckers, flycatchers, crows, eadowlarks, orioles, sparrows, tanagers, vallows, vireos, warblers, titmice, chickaees, wrens, kinglets, thrushes and bluerds all offer their songs and color to the anderer of the woods.

One may go from the seacoast to the ountains in Carolina and, amid the towerg peaks of the Blue Ridge, sixty-six of hich exceed six thousand feet in height, e may see the golden eagle, the splendid ack hawk, and even that sable dweller of e crags, the raven, while the balsam forests sound at times to the thunder of the sing grouse. There is little doubt that e Carolina junco, however, is *the* bird of e mountains. It is found everywhere above ree thousand feet and nests abundantly, at nes placing its home in the closest proxity to human habitation, sometimes on the ry porches of the houses. Here too, in the estnuts and white pines, the scarlet tanar and the cedar waxwing are at home; in e grand old hemlocks the dainty blackcoated green warbler makes its nest, while the lower growth of rhododendron and ountain laurel, the Cairns' warbler, woodrush, catbird and rose-breasted grosbeak ild their grassy domiciles. In the migran times, armies of warblers, both the nestg species and transient visitors, pass in ves among the tree-tops, puzzling the server in their multitudes of plumage l rapidity of movement.

Mountain bird song reaches its sublimest gh s in the glorious music of the veery. ere is no music in all the realm of avian

(Continued on page 344)

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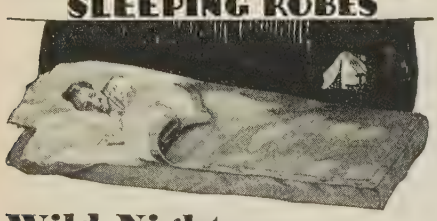

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CAROLINA FEATHERS

(Continued from page 343)

repertoire which, to the author's mind, is so infinitely appealing, so mysteriously ethereal in its quality as the silver tones of this mountain chorister. To sit upon an upthrusting pinnacle of rock in late afternoon, overlooking a tranquil valley, and hear this exquisite benediction to the day floating upward from the balsam slopes, is an experience which enthralls one utterly. It is as if some elfin minstrel far below is whistling a liquid poem through long convolutions of silver pipes; the effect being superbly delicate and thrillingly beautiful, the ultimate in Nature's music.

On the higher peaks one comes into the realm of such altitude-loving birds as the red-breasted nuthatch, the golden-crowned kinglet and the winter wren. Amid the balsam forests, so thick at times that the sun rays never touch the ground, these tiny sprites sing their songs and build their homes. Only the soaring eagle and circling falcon above the crags go higher; to know these infinitesimal mountaineers one must go to the peaks of Mitchell, Grandfather and the Black Brothers.

And so, from "ocean's wave-beat shore" to the time-scarred summits of the Blue Ridge, Carolina is rich in avian folk. Her present day attractions are no less interesting than her long and honored history in American ornithology, and to those who would explore her beauties and tread her sands and peaks in search of feathered friends, she has ever a ready welcome.

HERITAGE OF TREES

(Continued from page 327)

to the State by the Federal government and is being used for experiments in tree planting and the control of drifting sand. State forest nurseries in both states are now distributing tree seedlings at cost to private landowners for reforestation purposes and are giving them away to schools and other organizations in broad plans of forest education. Yet no adequate plans have been adopted to put back to work the cut-over and devastated lands, of which there are said to be from five to seven million acres in the two Carolinas.

South Carolina still has twenty billion board feet of standing timber. North Carolina probably has about the same. The lower parts of these two states form the central part of the North Carolina pine region which is obliged to place this second growth pine lumber in the eastern seaboard markets in close competition with the virgin timber of the Pacific coast. More than fifty per cent of all the lumber cut is second growth pine, chiefly loblolly in the Coastal plain and short-leaf and Virginia pine in the Piedmont. With fire prevention, reforestation and reasonable cutting methods, this region should be able largely to control the eastern markets after the accessible virgin timber of the West has been cut over and sold, and bring back to these beautiful Carolinas a semblance of the thick-growing forest cover of by-gone days.

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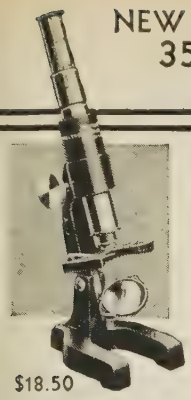

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WHAT NATURE GAVE TO CAROLINA

(Continued from page 297)

and dense. At my home in Chapel Hill, the flowers are so abundant as actually to lie over and touch each other for many square yards. Strangely enough, few who see it in my garden recognize it as the common cross-vine of the woods.

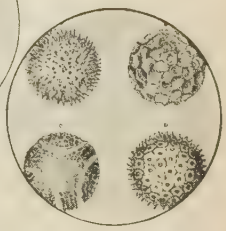
The flat pine woods of the coastal plain present a brilliant display of flowers and are a favorite habitat for the interesting insectivorous plants. The well-known Venus fly-trap ranges through this section, as well as in scattered locations from near Washington, N. C., south to Murrell's Inlet, S. C., a distance of about 185 miles, and from the coast westward about 115 miles to Lakeview, N. C. Few botanists realize the extent of range of this plant. Orchids in great variety form colored carpets in these flats—carpets of richness and design exceeding the most elaborate products of the weaver's art. The most spectacular are perhaps the fringed orchids, *Habenaria,* with ample spikes of lively orange color. I have seen these set in such masses as to remind one of a display of phlox in cultivated plots, and many others of the sixty species of orchids found in the two states are nearly as brilliant and profuse during the spring months.

Perhaps the most spectacular shrub of the pine flats is the little *Azalea atlantica* with rigid, upright, rather simple stems about one or two feet high, and with underground runners that form large colonies. It covers thousands of acres with its pure white, fragrant flowers, although it does not extend into the sand hills. Curiously enough, it has passed by unnamed until recently, although it is very different from either *A. nudiflora* or *A. viscosa,* growing in the same region. In the sandy flats below Wilmington is the remarkably heath-like *Dendrium buxifolium,* with massive roots and base and short uprights in dense clusters, each bearing a conspicuous group of white flowers at the tip. Other species of this genus so similar as to be almost indistinguishable are found on the distant exposed tops of our high mountains, pressed down among the crevices of the rocks. Near the coast the mistletoe reaches its highest development, although it is also to be discovered in the piedmont region.

On the dikes or "banks" of the old deserted rice fields that border all the rivers as they approach the coast grows one of the most loved and sought-for seaside flowers, *Clematis crispa,* with sweetly fragrant hanging bells. As a neighbor to these "blue bells," so called locally, may be found the exquisitely delicate grass-of-Parnassus, whose inch-wide, white flowers have broad petals quaintly marked with lines of green that stand singly at the top of straw-like leafless stalks a foot or two above the ground. Near the edges of creeks and bays one is almost certain to see the wild wistaria, native of the southern sea-border, and a far more delicate and less rampant vine than its oriental cousin.

Back from the coast lie the sandhills, a series of rolling hills with more or less extensive flats between, covered with immense forests of long-leaf pine. The growth

Head of a mosquito at low magnification.



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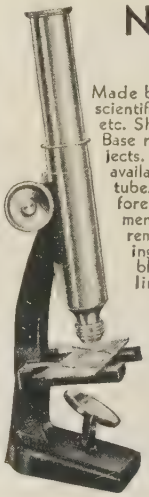

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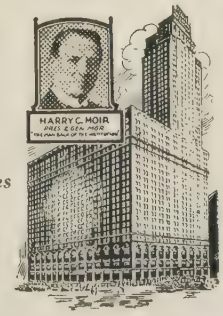

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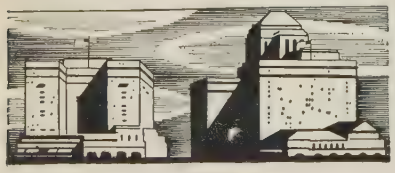

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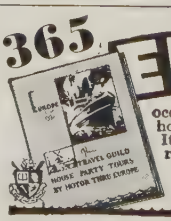

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is open and beneath the pines is a lower terrace of dwarfish oaks which rise above a still lower level of herbaceous plants that are so scattered as to leave the white sand everywhere visible.

In early spring a tourist traveling along the fine highways through this sandhill region has almost constantly in sight brilliant sweeps of prostrate phlox. Here, too, is great profusion of lupines in solid beds; mats of the prostrate yellow composite, *Chrysopsis gossypina,* and scattered clumps of the false indigo, *Baptisia tinctoria* and *B. villosa.* If he will look carefully, the traveler may find the lovely little "pyxie moss," which is not a moss at all but a small creeping plant covered in spring with exquisite little pink flowers. The violets are so profuse as practically to dominate the entire roadside, and now and then appear the delicate round pink pompons standing on stiff little upright stalks that mark the *Schrankia,* whose sensitive leaves fold up instantly when touched. The peculiar purple flowers of the maypop, with their fringed skirt in the center, climb all over the shrubbery and later will be replaced by yellowish oblong fruits about the size of a small orange, the seeds of which are rather good to eat. Occasionally may be found the little known *Passiflora lutea,* the smallest of all maypops, with little yellow flowers less than an inch broad and tiny purple fruits about the size of a pea.

The swamps and bays, dominated by the towering cypress, have very much the same woody vegetation as the coastal plain. In standing water, climbing up the bushes, is one of the most conspicuous plants of this region, a deciduous smilax with red berries which has been named Walter's smilax, after Thomas Walter of South Carolina, the author of *Flora Caroliniana,* one of the first books on North American botany.

The most handsome of the piedmont flowers is the painted cup or Indian paintbrush that grows so abundantly as to turn the meadows a brilliant red. In damper meadows, the meadow or Atamasco lily, which is really an amaryllis, rivals the paintbrush in its effort to lay down a thickly woven carpet, and in the spring some of the fields near Chapel Hill are as if covered with snow. Despite these flowers, however, the piedmont cannot hope to equal the mountains for floral splendor. Nothing else can give to Carolina the unparallelled magnificence of the rhododendrons, the kalmias, the azaleas that create dense jungles of opulence and border both slow and swift waters with banks of bloom.

Of our four species of rhododendron, only two are well known. It is a strange freak of plant geography that the early purplish rhododendron of the high mountain tops, after almost fading away in the lesser altitudes, such as 3,000 feet or lower, and after entirely disappearing for hundreds of miles, should reappear facing bluffs of streams even as far down as Selma, only one hundred and fifty feet above the sea. I have given the lowland plant the form name *insularis,* as there are some differences between it and *R. catawbiense.* Both varieties are smaller than the great rose bay, *R. maximum,* which with the kalmia forms the thousands of acres of almost impenetrable laurel thickets of the mountains, and borders the mountain balds in such artistic array as to make one believe that the finest landscape architect had here performed his

best work. The other two varieties, *R. caroliniana* and *R. minus,* are both much smaller and have less ample panicles. The former inhabits the exposed rocky and dry elevations, such as Caesar's Head, Grandfather Mountain and Linville Falls.

The mountain sides covered with azaleas present in spring a display of color that is not equalled anywhere else in America or perhaps in the entire world. Seven species occur in the Carolinas, and a book would be required to do them justice. Besides these spectacular azaleas, our mountains are decorated with many kinds of beautiful shrubs that have become highly valued in cultivation. Among these are several species of hydrangea and viburnum, the mountain pepper bush, hawthorns of many kinds, crab apples, flowering raspberries, two species of syringa, sweet shrubs, four kinds of spiraea, pink robinias, four decorative and harmless sumachs in addition to the toxic varieties, two of *Euonymus,* the beautiful *Stewartia,* Jersey tea or red root, with delicate tender flowers sometimes tending to pink or lavender, *Diervilla,* and both red and black-fruited elderberries.

Such in brief is the glorious plant heritage of the Carolinas, from the palmetto strands to the craggy balds where eagles wheel and scream with none but the winds to hear. A heritage whose richness cannot be expressed in words nor whose beauty can be fully described within the compass of a magazine. To be appreciated it must be seen when spring touches the bays and pine flats and sand hills and mountain slopes and the land responds with its myriad blooms. And then again when, in the fall, we can see

"The flame of the dogwood and sumach
That fires the edge
Where the field carries up to the forest
Its purple of sedge;
The blue of the monkshood and aster,
The sourwood's wine,
And back on the hills the unshaken,
Sustaining green of the pine."

Transplanting Washington Elm

Out on the campus of the University of Washington stands the offspring of a famous tree, with two earth-filled boxes clamped around its more vigorous limbs. This elm grew from a scion of the famous Washington Elm, under which Washington took command of the Continental Army at Cambridge, Massachusetts, and is being prepared to furnish shoots to be planted on the spot where its renowned ancestor once grew. A movement is under way to replant the site of the historic incident, and doubtless the University of Washington tree will be the one selected to fill the need. This tree has grown from cuttings taken from the original elm thirty years ago by Arthur J. Collins, a graduate of the University, who was studying at Harvard.

Best Fire Season

Yosemite National Park enjoyed its most successful fire prevention year in history during 1930, according to Superintendent C. C. Thomson. Only ten small fires, burning over 4½ acres of brush, but damaging no timber, occurred.

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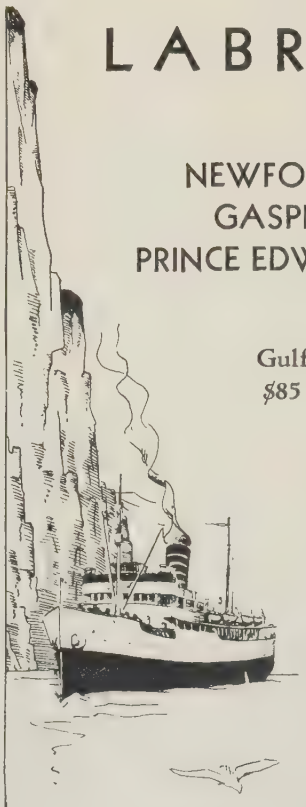

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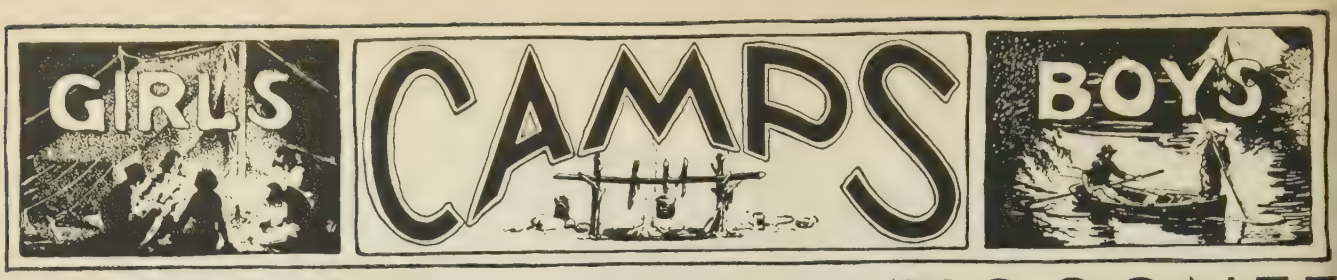

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OLD SMOKY

(Continued from page 324)

and bred such outstanding patriots as Boone, Sevier, General Williamson and the great James Moore, who was South Carolina's first colonial governor.

Swift flying detachments of backwoods riflemen from Virginia, Tennessee, the Carolinas and Georgia made short work of the Indian after the decision was made that he had to go. With no foreign ally at his ready command he was trapped like a hounded wolf at bay, snapping viciously at his foes. So deep did the razor edge of hate cut in the Carolinas that in 1838, President Jackson was led to banish his former allies—the Cherokees—to the Indian Territory. Thousands of them were deported, but a small remnant fled to the caves of their beloved Smokies. Smoke of their burning villages filled the gorges. Through the diplomacy of their adopted white chief, William H. Thomas ("Little Will", as he was affectionately called), twelve hundred were allowed to remain in North Carolina without government support. To this nucleus at Cherokee, N. C. we owe the credit for the last bit of colonial color left with us.

Just preceding—and after—the Indian exodus, Great Smoky territory began to be over-run with real estate agents and squatters from New England and abroad. Even Daniel Boone assisted in the hegira. The dominating Anglo-Saxon who once rudely brushed aside his red brother as "a cumberer of the ground" laid aside his deerskin doublet and scalping knife and applied himself to the more peaceful profits of husbandry. His unerring rifle continued to supply meat for his table from the teeming game of the forests.

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See Page 282

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But the first gun upon Fort Sumter soon shattered the beautiful dream of calm living as the War of the States in 1861 tore at the vitals of the Southland. Many mountaineers were valiant through its holocaust of tetanus and gangrene and asserted their divine right not to be pestered in their quiet coves. Col. Thomas held Indian Gap with six hundred Cherokees only to keep them out of inveigling alliances with difficulty.

The "Thomas Legion" of the Carolinas, however, claimed many brilliant volunteers and the mountain sharpshooter did his bit a second time.

Again the mountaineer let the enemy feel the hot sting of his hard-hitting rifle when he choked through poison gas at Soissons, the Argonne, and the Montdidier salient during the late war. With all the strength of the outdoors man he thrust his bayonet through the Von Hindenburg phantom and came home with both a *Croix de Guerre* and a deep longing to remain in his peaceful hills. The World War had not lessened his disrespect for the palatinates that caused his forefathers so many sleepless vigils.

From North Carolina's non-miasmatic wine-colored waters of the Dismal Swamp to the snow-covered peaks of the balsam-crowned Smokies is displayed such an astonishing variety of vegetation that visitors are amazed at Nature's versatility. Through all the history of his remarkable possessions the fore-sighted Carolinian has kept his industrial powder dry; built excellent highways; fought off the speculator and has even ridden over rough ground to realize his Great Smoky National Park project, besides giving—and taking—a few jolts from power corporations in battles over dams.

At present, our old-world mountaineer who still talks and looks the seventeenth and eighteenth centuries, looks out upon his sea of big hills with a deeper appreciation of their beauty, their sublime serenity, their deep mystery of peace which fills their vast vales and envelops their haughty tops with an eternal significance. He has seen great things both at home and abroad, but best of all, he loves his Smoky Mountain fireside. And the veiling haze that swathes the lofty peaks before his door evokes, for him, memory of other smokes—smoke from the funeral pyres of the moon-eyed people of the dim ages; the burning of Indian villages of colonial days, the battle vapor from sputtering flintlocks of the past.

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(Continued from page 301)

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Long ago the beauty and abundance of Nature in Carolina drew André Michaux, Joel Poinsett, Agassiz, Audubon, Clingman, Bartram—the fathers of American natural history. Today, the lure of glamorous shore and romantic tidal river in the Low Country renders Charleston a southern Provincetown, while purple heights and the flaming autumn glory draw poet and painter to the Valley of Lynn, where once the music of the tumbling Pacolet soothed the last hours of Sidney Lanier.

IV

To the increasing multitudes who pause in the Carolinas in the Great American Migration that moves between north and south with the seasons, wistful marshlands, sea-gazing barrier islands, fragrant pinelands, purple mountains represent the abiding soul of this land—these form memories that weave into their dream, inviting them to linger, beseeching them to return. As one's car crosses some long, low bridge that spans a river near the sea, the echo of the horn mingles with the deep bellow of antediluvian survivals, bull alligators in the depths of cypress swamps.

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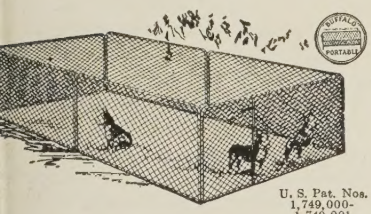

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The Vagabonds of the Trail

See page 282

Then the highway on arrowy causeway bisects broad, shallow lagoons, once emerald rice-fields, pride of the Old South, and as far as the eye can reach the surface of the water is dotted with wild fowl—green-head mallard, canvas-back, widgeon, teals, ibises and zigzag, jerky fleets of coots, all venturing within a stone's throw as though aware that it is unlawful to harm them from a public highway. Again in passing through deep forest, one may see antlered buck with swift timid doe dash across the paved way.

Beside the new highways gnarled and bearded live-oaks evoke memories of Spaniard, Frenchman, Englishman—Vasquez de Ayllon, Jean Ribault, Sir Walter Raleigh, a long company of gallant gentlemen. These old, old trees stand unchanged through changing centuries, shading the paths for new pilgrims and, it may be, remembering others who once loved this land. Under cloudy skies, when white mists march up from the sea in pale battalions, gray pennons stream from their ponderous arches in recollection; under clear blue skies when the southern sun lights all the forest ways their glossy leaves sparkle and rejoice, when evening comes and the sun dips to the far, faint tree line beyond the level marsh, its last rays kindle pink and coral mysteries amid their tangled webs and skeins of Spanish moss and then romance, old loves and high adventure wrought here in Carolina's yesterdays return to the quiet scene. Night comes, the full moon casts deep shadow under the low-spread trees, lighting threads of silver through the world of marsh beyond—

"The tide's at full; the marsh with flooded streams
Glimmers, a limpid labyrinth of dreams."

Nature Guide School

"Cap'n Bill" Vinal, director of the Nature Guide School of Western Reserve University, announces that the school will open June 20 and run for six weeks until July 31 this summer. So successful has been this school in the training of teachers, scout and camp-fire naturalists, museum educational workers, and other leaders in the field of Nature, that its enrollment is usually well filled with both men and women, and the Junior Nature Guide School, limited to 32 girls, is unable to care for all applicants. A full program of Nature courses is planned, both for the senior and junior guides, and Nature Guide certificates are granted those completing the requirements. The School uses the plant of Western Reserve Academy at Hudson, Ohio, which is ideally adapted for the purposes of Nature training. Application cards and literature are available at the School of Education, 2060 Stearns Road, Cleveland, Ohio.

Attention, Entomologists

Alan Ectman, of 58 Fourth Street, Chelsea, Mass., is interested in becoming acquainted with other amateur entomologists, to exchange information with them.

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CAROLINAS SHOWING WAY IN PLANTING

FORESTRY'S message is being heard in every county in the Carolinas. Through the distribution by the American Tree Association of the Forestry Primer, a groundwork has been laid as to the importance of putting idle land to work growing trees. Through J. S. Holmes, the state forester in North Carolina, and H. A. Smith, the state forester in South Carolina, the reforestation idea has been put before thousands of young Americans. This was followed by the George Washington bicentennial tree-planting program. The call to plant trees to mark the bicentennial, in 1932, of the birth of the first president is meeting with a remarkable response, not only in the Carolinas, but in every state in the country.

"North Carolina is taking a big part in this program," says R. W. Graeber, extension forester, who adds that "the 4-H Club boys and girls are making preparation for planting. More than 700 boys and girls who attended the short course at State College gave their pledge to Gov. O. Max Gardner to plant a tree during the next planting season. Many of these are preparing to plant 25 or more black walnut trees, others will plant pines or black locusts as regular forest plantings, while many will plant shade trees around their homes or along the highway. The County Farm and Home Agents are being enlisted in this campaign. The American Tree Association has sent to all these agents booklets and other printed matter."

On the shores of Lake Johnson, Raleigh's water supply, the Boy Scouts have begun a Washington memorial planting with 1,400 trees under the direction of F. H. Claridge, forester.

In South Carolina, M. J. Smith, county home demonstration agent, reports that the 4-H Girls' Clubs are getting on the national honor roll of the American Tree Association. One of the first reports is that of the club at the West Springs High School at Union. A Washington knoll has been started near the school, with 150 trees. Women's Clubs and the Masonic fraternity have joined the campaign, too.

At Greenville, S. C., nearly 20,000 trees are reported by C. W. Perry who is gathering the registrations for the national honor roll in that county. The agricultural class of the Welcome High School started off the program with 2,000 trees on Washington's Birthday. The Boy Scouts handled the crowd, so great was the interest in the program. J. T. Rogers of the agricultural class helped arrange the program along with W. B. Jones, the superintendent, and Miss Claudia Phelps of the Federation of Women's Clubs.

In other states, plans are going forward for planting in the Fall and for community dedication exercises in 1932 and every year thereafter. The tree planting is to be continued, too, in thousands of places. North Dakota, for example, has mapped a five-year program through the state department of education.

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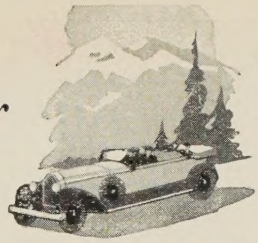

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